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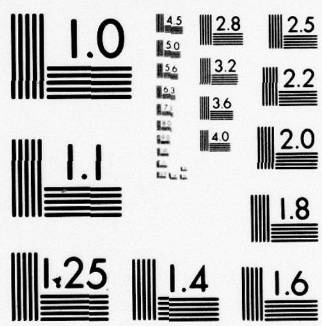

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USER GUIDE FOR THE AIR FORCE BASE AUTOMOTIVE TRANSPORTATION SIMULATION MODEL-BATS

VOLUME II: DOCUMENTATION

LEVEL II

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The Base Automotive Transportation Simulation (BATS) Model is a transportation planning and traffic flow model designed to simulate traffic volumes and flows on an air base. The principal model inputs are a road network, land use zones, demographic variables, and gate counts. The land use zones and demographic variables are used to assign volumes to the road network, and these volumes are calibrated using the gate counts. The flow characteristics on each road in the network are simulated using the volumes assigned. Average speed and

over

volumes are the results of the model and these may be directly input to the Air Quality Assessment Model (AQAM) to estimate pollutant emissions and dispersion from traffic sources. A volume flow plot of the network is an optional output of the model.

PREFACE

This report contains the Base Automotive Transportation Simulation (BATS) model computer program documentation developed during the period June 1978 - September 1979 by SRI International, Menlo Park CA, under contract F08635-76-0132, with HQ Air Force Engineering and Services Center/RDVA, Tyndall AFB FL 32403. Lieutenant Harold A. Scott, AFESC, managed the project.

Ms Marilyn Duffey-Armstrong was the project leader responsible for developing BATS. Mr Eugene Shelar modified the motor vehicle emission routines used by the Air Quality Assessment Model (AQAM). Stanley Isaacs, Linda Jones, William Stock, Judith Monaco, Robert Cofer, Irving Yabroff, Hisao Shigieshi and Marilyn Sanfillippo were the programmers for the BATS model. Ms Susan Swope wrote and prepared a major portion of the report.

This report has been reviewed by the Office of Information (OI) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This report is approved for publication.

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TABLE OF CONTENTS

III DOCUMENTATION (Continued)

APPENDICES

LIST OF FIGURES

LIST OF TABLES

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SECTION I

INTRODUCTION

1.1 Background

The objective of this project was to develop an air base motor vehicle model that would simulate an air base traffic system by using available transportation and land use data. The model produces a graphical representation of the air base motor vehicle operation and also produces a file of traffic flows for input to the Air Quality Assessment Model (AQAM). Thus, AQAM will be made sensitive to air base land use and transportation activities, and will be able to predict motor vehicle-related air pollution effectively.

The Base Automotive Transportation Simulation (BATS) Model is useful for assessing the effectiveness of various planning strategies such as strategies to reduce and control air pollution, traffic engineering projects to reduce congestion and improve flow, energy conservation strategies, and land use strategies represented in Air Force comprehensive plans.

The model was tested and its performance evaluated at three typical air bases (Tinker, Williams, and Davis-Monthan). Data for inputs to the model were collected by the project team in two phases: The first phase included a survey and extraction of existing data from the TAB A-1 and Military Traffic Management/Transportation Engineering Agency data. The second phase involved field surveys at the three air bases. Information was collected on base operations necessary to operate the model (e.g., work schedules and the peak operational periods of such facilities as gas stations, hospitals, and base exchanges).

The data collection task is documented in a technical report that provides specific guidance to air base personnel who use the model (see ESL-TR-79-16, Volume I, Data Collection and Reduction). The data collection document demonstrates step by step how to extract required data from the existing sources and how to collect data by using field survey techniques, if required. The document also provides average or default values (which can be used as model inputs) that are based on the three air base studies undertaken by the project team.

1.2 Review of Regulations

On February 25, 1974 (Federal Register, Vol. 39, p. 7270), the Environmental Protection Agency administrator promulgated a regulation (40 CFR 52.22 b) for the review of indirect sources for inclusion in the Clean Air Act implementation plans. Subsequent changes and clarifications

were issued (Federal Register, Vol. 39, p. 25292, July 9, 1974) and the regulations were scheduled for implementation on January 1, 1975. As a result of congressional action in December 1974, the EPA was prohibited from using FY 1975 funds for the enforcement of indirect-source (and so-called parking management) regulations.

According to the regulations, indirect sources include, but are not limited to: highways and roads; parking facilities; retail, commercial, industrial, educational, recreational, amusement, sports, and entertainment facilities; office and government buildings; apartment, condominium, and housing projects; and airports. For those facilities that may be aggregated as parking or trip attraction facilities, the regulations require that an air quality impact assessment be made if the new or incremental parking capacity exceeds certain limits. Within Standard Metropolitan Statistical Areas (SMSA), this includes new facilities with parking capacity of 1000 cars or more or an increase of an existing facility by 500 cars or more. In the case of highways, the regulations apply if the expected average daily traffic (ADT) meets or exceeds 20,000 within ten years for a new roadway, or if there is an increase of 10,000 or more on a modified roadway. Outside the SMSAs, all the limits are exactly double.

To satisfy all technical requirements for the assessment of the anticipated air quality impact of all roadway and parking-related projects, the Air Force has developed the comprehensive AQAM and BATS models. These models provide a detailed air quality impact analysis by first performing a dynamic analysis of traffic flow within and adjacent to the base and then determining emissions and atmospheric dispersion of pollutants.

In addition to providing a comprehensive analysis tool for assessment of the local impact of roadways and parking facilities (in terms of ambient concentrations of carbon monoxide), BATS and AQAM can be used for a variety of similar analytical requirements. First, they can be used to meet the requirements for preparing environmental impact statements under the National Environmental Policy Act of 1970 (Public Law 91-190) and similar state laws. BATS and AQAM would, of course, also be directly applicable to satisfying the local impact-assessment requirements of the proposed (and now delayed) parking management regulations (Federal Register, Vol. 39, p. 30440, August 22, 1974).

1.3 Computer Requirements

BATS is written in FORTRAN IV. It has been debugged and tested on SRI's CDC 6400 computer and the CDC 6600 at Eglin AFB. It has been run successfully under the KRONOS and SCOPE operating systems using 60,000 words of core storage. The model should be readily transferable to any computer system with FORTRAN IV capability. Because of the large core storage requirements, however, the program would need modification before it could be run on medium or small scale computer systems. Such modifications could be undertaken without much difficulty so that the BATS program could be run using 32 kilobites of computer storage.

1.4 Document Organization

This document describes the BATS model and discusses each subroutine or program in the model. Section 2 provides the logical functioning of the model, the basic equations used in the model, and the reasons behind the unique features of the model. Therefore, the second section is useful to the person who wants to know the general features of the model.

Section 3 is useful to the person who wants to understand and perhaps change an operational result of the model. This section discusses the purpose of each subroutine or program, its inputs, and its outputs. A listing of each routine is provided in Appendix A. Appendix B describes the utility routines, Appendix C presents a sample run of BATS for Williams AFB, and Appendices D and E (Volume 3) contain the sample runs of Tinker AFB and Davis-Monthan AFB, respectively.

SECTION II

BATS--GENERAL DESCRIPTION

2.1 Introduction

BATS combines the features of transportation planning and traffic flow analysis by predicting volumes, speeds and delays on the network of streets and zones which comprise an air base. The model synthesizes the capabilities of the SRI Network Analysis Program (SNAP) (Haney and Thompson, 1971) and Indirect Source Model for Pollution (ISMAP) (Sandys et al., 1975).

Figure 1 presents a flow diagram of the BATS program at its most general level. The model is very straightforward, consisting of INPUT, INITIALIZATION, TRANSPORTATION PLANNING, TRAFFIC FLOW, and OUTPUT functions. Each iteration causes a loop through the entire program. Because this loop includes the input function, the user inputs new data for each hour to be run. In this way, the number of trips and other network characteristics may be changed for any time period simulated.

All tests and loops shown in the flowchart are required to perform multiple iterations through the model. Multiple iterations allow the user flexibility in the accuracy, amount of computer inputs, and computer time associated with each computer run of the model. For example, the user may select 1 hour as the length of time during which constant demand and flow will provide desired simulation accuracy. He may also choose to simulate 12 hours of the day as representing most traffic flow on the base. Then the program would input 12 sets of data and perform 12 iterations to predict traffic during 12 hours. Alternately, if a user requires less accuracy, he might choose to simulate 12 hours in one iteration; therefore, the time period simulated would be 12 hours and only one set of input data would be read.

The flow diagram also shows a special feature that allows for 15-minute iterations without looping through the input function. Typically, congestion will not occur during an entire hour on a street network; rather, it is confined to a shorter, perhaps 15-minute, time period. Therefore, the user should use the 15-minute iteration when he wishes to predict possible congestion occurring on the base. When less accuracy is required, a 1-, 2-, 12-, or 24-hour time period may suffice to predict travel on the network. The output of the model includes printed reports, plots of the traffic network, and a traffic data file for input to the AQAM program. The output is described in the BATS User Guide ESL-TR-79-16 Volume 1: Data Collection and Reduction and therefore is not included in this document.

2.2 Input

Data are input for each time period or iteration that is part of a computer run. The 17 types of input are identified by Card Types 0 through 16. Cards of type 0 and 1 are read for each iteration.

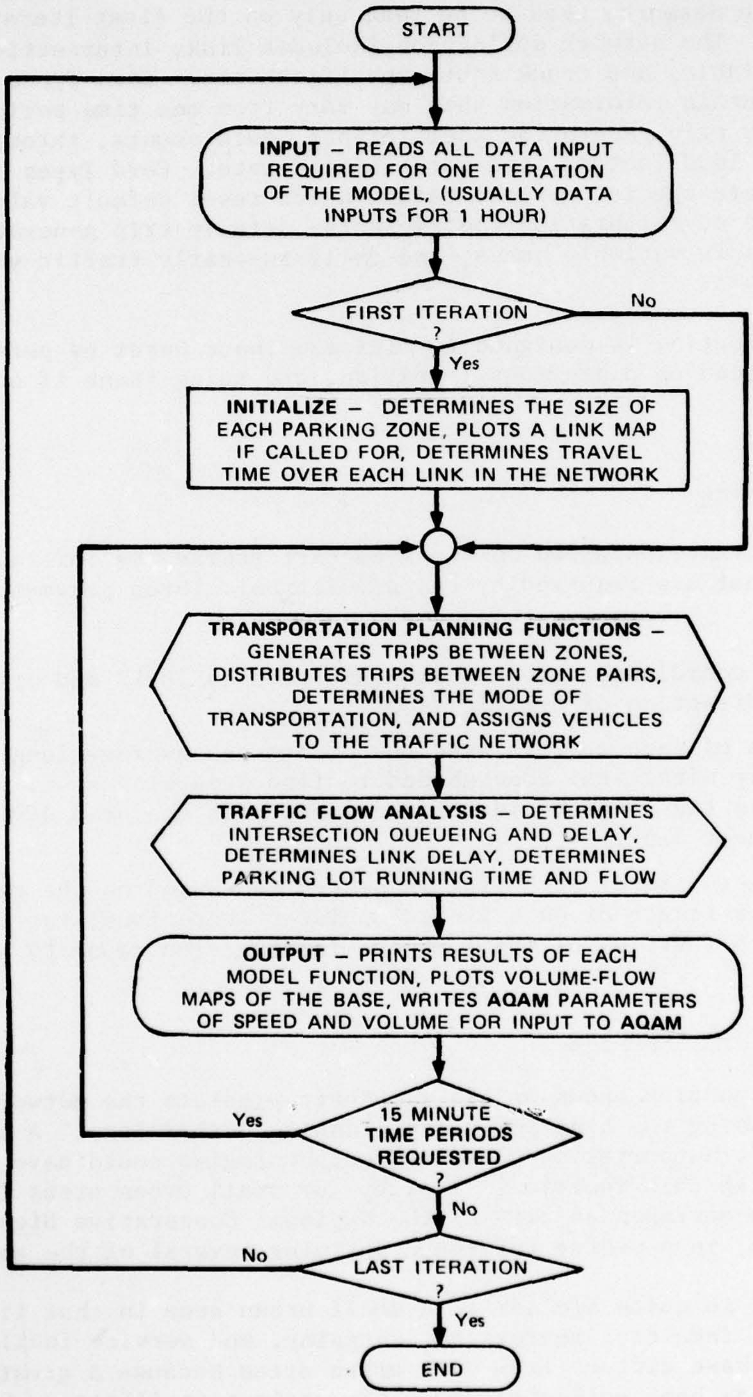

FIGURE 1. BATS FLOW DIAGRAM

They describe the heading, the options, and the number of Card Types 2 through 16 to be read for an iteration. Card Types 2, 3, 4, 5, and 10, which define the network, need to be read only on the first iteration of the program. The network definition includes link, intersection, zone, demographic variable, and truck route specifications. Card Types 6, 7, 8, 9, and 11 contain information that may vary from one time period to another, such as trip generation coefficients, gate counts, through traffic counts, load factors, and work-shift counts. Card Types 12, 13, 14, 15, and 16 are special purpose cards, which reset default values of plot scale factors, calibration coefficients, default trip generation arrays, demographic variable names, and daily-to-yearly traffic volume conversion factors.

The input routine is designed to minimize input cards by permanently storing values read on a previous iteration, and using these if no other values are read.

2.3 Initialization

The second function shown on the flowchart stores the initial values of parameters that are required by the simulation. Three parameters are initialized:

- The x-y coordinates of each link are read by INPUT and oriented by the direction of traffic flows.
- The area of each zone is used to compute the average length of each trip within the zone needed to find a parking spot. This length is the longest side of the zone, plus the area divided by the longest link.
- The time to travel each link is determined based on the speed limit and length of each link. On later iterations, the travel time is a function of the link and intersection capacity and flow.

2.4 Transportation Planning

The third function shown on the flowchart predicts the network vehicle counts using the transportation planning methodology. A great many different "transportation planning" methodologies could have been used to accomplish this function. A study for small urban areas (Grecco et al., 1976), undertaken as part of the National Cooperative Highway Research Program, is a useful reference defining several of the approaches.

An air base is quite similar to a small urban area in that it has housing, office, industry, recreation, shopping, and service facilities. However, an air base differs from many urban areas because a great deal of information has been collected about the various facilities. The TAB A-1 Environmental Narrative found at most air bases illustrates the availability of data that can be used in the TRANSPORTATION PLANNING process.

2.4.1 General Methodology

The purpose of the transportation planning methodology is to estimate, for selected time periods, the number of vehicles on each link of a network. The methodology proceeds through five sequential steps as shown in the flowchart, Figure 2. The first step, trip generation (TRIPGEN), is the most complex step in the methodology; it allows the user many optional ways of generating trips from or to each zone. Trip generation predicts how many persons wish to make a trip away from (productions) or to (attractions) a zone. The origin or the destination of a trip is predicted, but origin and destination pairs must be predicted by a subsequent function.

The trip distribution function (GRAVO) determines the number of person trips going between each origin-destination (O-D) pair. In this function, trips that go from an exterior to interior zone or interior to exterior zone are distributed from an origin zone to a gate and then from the gate to a destination zone. This function requires that routes between O-D pairs be generated. The distribution function uses travel time between O-D pairs as a parameter in the equation that predicts person trips.

The modal split function (MODAL), the next step in the transportation planning method, determines the mode of travel of each person, which, in the BATS model, is by civilian vehicle, military vehicle, bus, or bicycle. A load factor is determined for each type of vehicle operating from each zone. This factor can be specified as a function of O-D trip travel time for buses. Person trips are then converted to vehicle trips using the load factor for each type of vehicle, and the percentage of civilian vehicles, military vehicles, buses, or bicycles associated with each zone.

The trips are stored as the number of vehicles going from origin to gate, from gate to destination, and from internal origin to internal destination. At this point in the methodological sequence, the user may take advantage of the fact that most vehicles on an air base travel through base gates during peak hours. The smooth function (SMOOTH) uses the base gate counts to calibrate predicted vehicle gate counts to the measured values. Thus, through calibration the model can adjust the predicted number of vehicles arriving and departing the base during any time period to match gate counts. Furthermore, the smoothing function shifts trips between origin-gate and gate-destination pairs so that the predicted number of vehicles using each individual gate closely approximates the number actually counted as using the gate.

The final step (ASSIGN) in the methodology assigns vehicles to the street network of the base. The minimum time path between each origin-gate, gate-destination, and internal origin-internal destination pair is determined, and vehicle trips between each pair are assigned to the links (street segments) in the route. A second minimum time path between each zone pair may be determined and then the vehicle trips are split among the two alternate routes in indirect proportion to the route travel times.

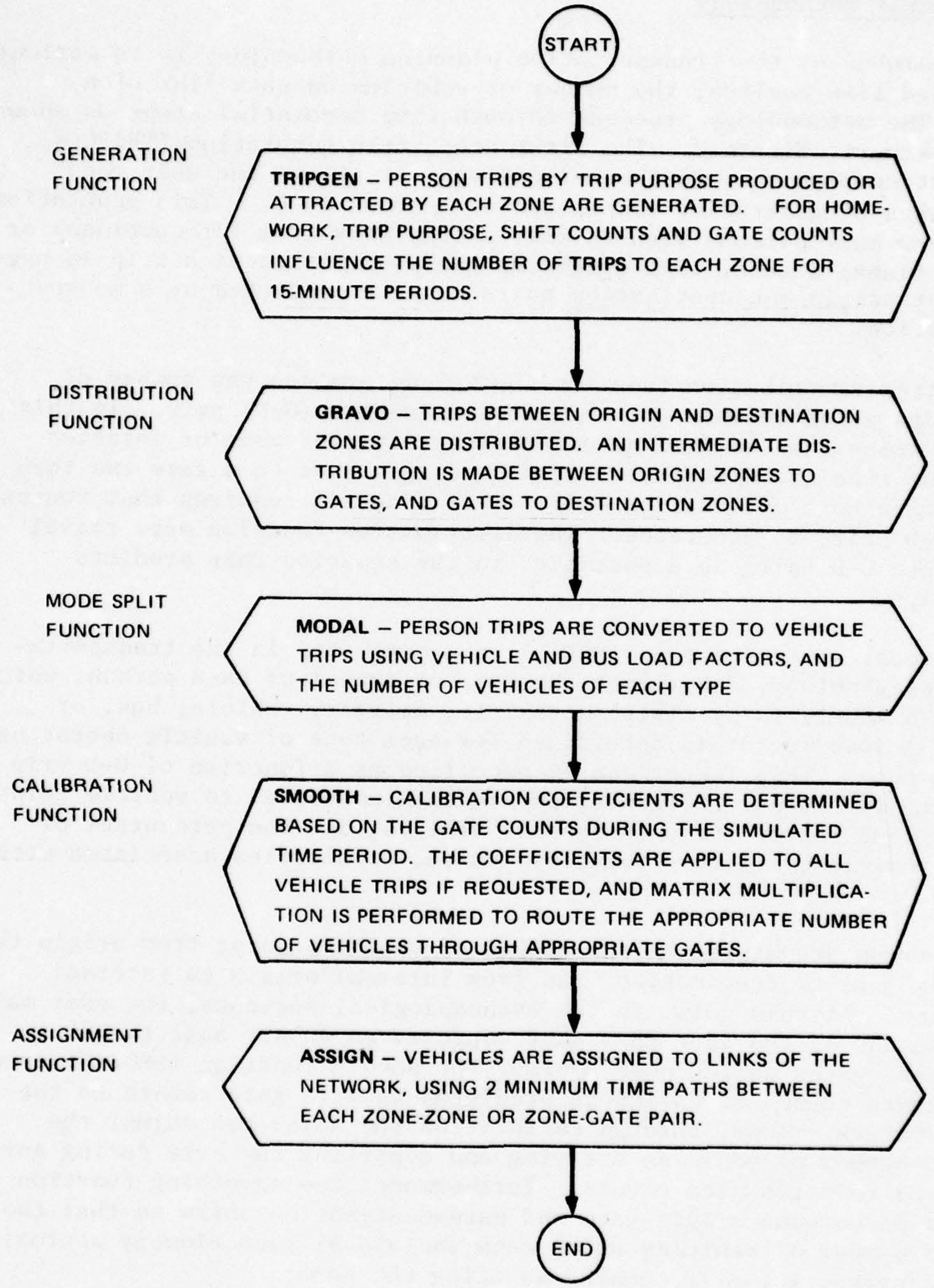

FIGURE 2. TRANSPORTATION PLANNING FLOW DIAGRAM

The route travel times are initially based on the speed limit on each link in the network. After the first iteration of the BATS model the travel times depend on the traffic flow, which was predicted on a previous iteration. In this way, the model is sensitive to congestion occurring in the network, and routes vehicles away from areas of congestion found during a previous iteration.

BATS provides inputs through ASSIGN to an air quality assessment model. These inputs take the form of the number of vehicles of six types on each link and the number of hot transient, hot start, or cold start vehicles on each link.

Results of the five sequential steps of the transportation planning methodology are counts of the number of vehicles on each link, a count of the turning movements made from each link, a count of the type of vehicle for both civilian and military vehicles, and the number of hot transient, hot start, or cold start vehicles on each link. For the summations in the equations below, the limits are those that were used in the BATS computer program.

2.4.2 The Trip Generation Function

The trip generation function allows the user to generate trips from or to a zone in four different ways using four sequential steps. Figure 3 shows the necessary steps and the tests made before performing each step. The first step generates NTO, the trip productions, from a zone Z, using VAR, the demographic variables associated with zone Z and COEFO, the trip productions coefficients associated with trip purpose K and demographic variable J.

$$NTO(Z,K) = \sum_{J=1}^{10} VAR(J,Z) \times COEFO(J,K)$$

The trip attractions, NTD, to each zone Z are similarly generated using VAR and COEFD, the trip attraction coefficients associated with trip purpose K and demographic variable J.

$$NTD(Z,K) = \sum_{J=1}^{10} VAR(J,Z) \times COEFD(J,K)$$

The second step in the trip generation function is to determine default productions or attractions, if they are called for. Default values are determined by using the land use designation of each zone and the PLUALU array to generate trips between the various land use types. Each element of the PLUALU array is the number of total trips, for other than Home-to-Work or Military-Vehicle trip purposes, which are generated between land use types. The rows of the array are Productions by Land Use and the columns are Attractions by Land Use. The PLUALU

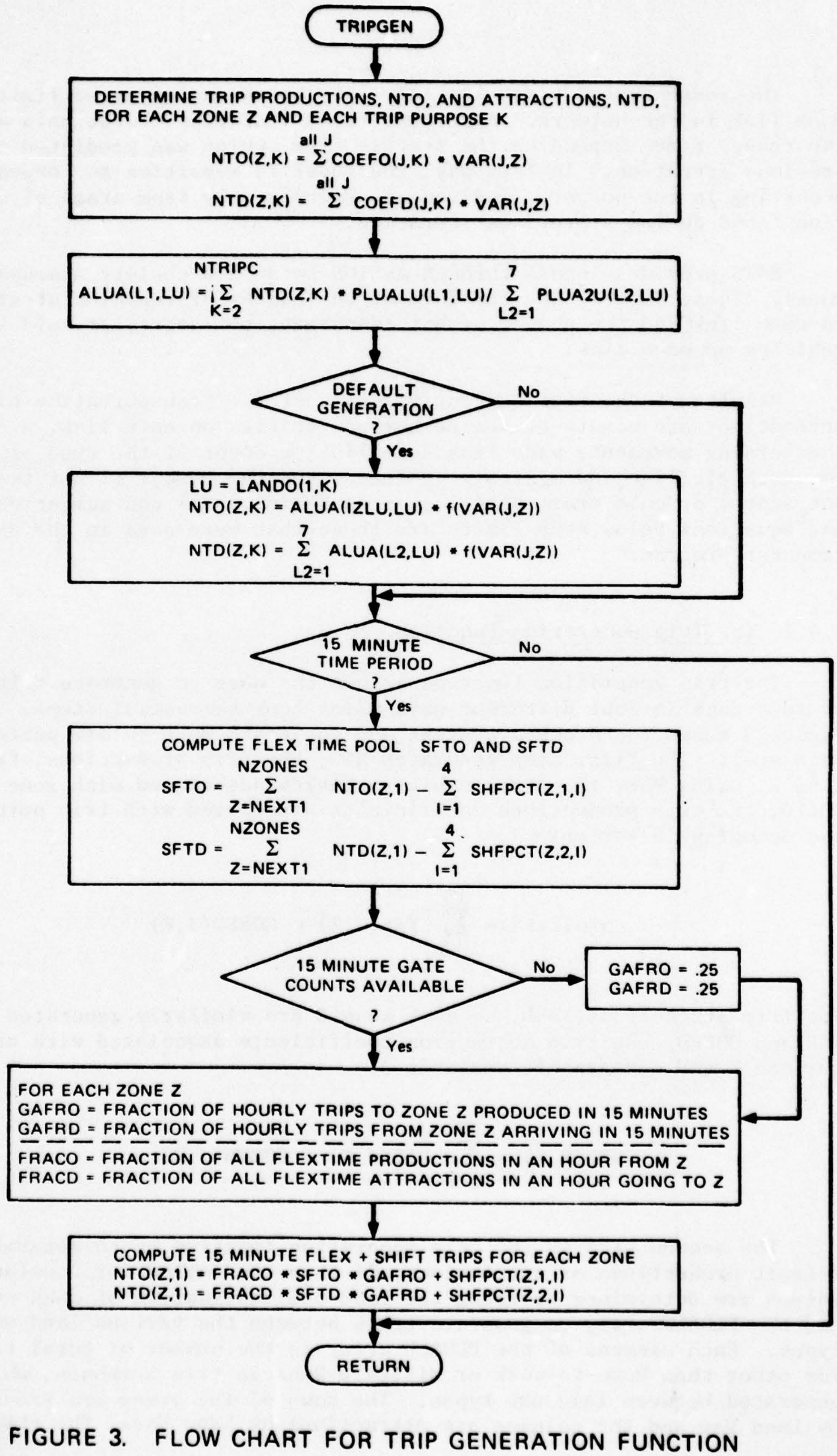

FIGURE 3. FLOW CHART FOR TRIP GENERATION FUNCTION

array was generated from an origin-destination study, and time-of-day travel patterns studied at Williams AFB. An Array of Land Use Attractions for a particular time period, ALUA, is made up from the PLUALU array and the NTO and NTD arrays. The column elements, L1, of the ALUA array are filled in using the following equation

$$ALUA(L1,LU) = \sum_{K=2}^{NTRIPC} NTD(Z,K) * PLUALU(L1,LU) \Big/ \sum_{L2=1}^{7} PLUALU(L2,LU)$$

where LU is the land use associated with zone Z, L1 goes from 1 to 7, and NTRIPC is the number of civilian vehicle trip purposes. The ALUA array stores the land use trips specified by the input data through the VAR(J,Z), and COEF(J,K) variables, and those land use trips inferred from the values in the PLUALU array.

In this array the attractions to each land use are given precedence over the productions. Some columns of the ALUA array are not initialized if trips have not been specified for a particular land use on a Card Type 6. When this occurs, the NTO array is used to complete all rows with land use, L1, associated with each Z. The remaining uninitialized elements are then filled in proportion to the corresponding PLUALU array elements. The ALUA in its final form is an array of trip productions and attractions associated with each land use type.

Default generation of trips takes place when a zero COEFO or COEFD is input by the user for some trip purpose. The NTD array can be filled for trip purpose K for each zone Z using its land use LU to define the total number of trips made for this trip purpose.

$$NTD(Z,K) = \sum_{L2=1}^{7} ALUA(L2,LU) \times f(VAR(J,Z))$$

As an example, if K is the shopping trip purpose, then all zones Z whose land use is shopping (LU=3) will have a value stored in NTD(Z,K). This value will be a proportion of the total trips attracted to all zones with land use = shopping. Because no particular demographic variable can be used to generate these attractions, a function of all demographic variables associated with all zones with LU=3 is used to generate the fraction of shopping trips going to a particular zone Z. If COEFD is not zero then:

$$f(VAR(J,Z)) = COEFD(J,K) \times VAR(J,Z) \Big/ \sum^{\text{all } Z} VAR(J,Z)$$

The NTO array can be filled for trip purpose K, for each zone, Z, using the zones' land use, IZLU, to determine which zones produce trips. In this case land use LU and trip purpose K are synonymous; that is, the trip purpose must be for shopping, service or other land use, LU.

$$NTO(Z,K) = ALUA(IZLU,LU) \times f(VAR(J,Z))$$

The sum of NTO will therefore equal the sum of NTD for any trip purpose K, where K=2,3...NTRIPC.

The next step in trip generation is the inclusion of shift counts in the NTO, NTD arrays if these are specified by the input data. So far, the trip generation function has been dealing with hourly (or perhaps 8-hour or daily) trips. However, to model congestion during the peak periods it is necessary to consider 15-minute vehicle loadings of the network (of course, 10-, 5- or 1-minute loadings of the network would provide capability for even more accurate predictions of congestion, but such refinements would increase the complications of the modeling process enormously).

A simple means of predicting 15-minute loadings would be to make a 15-minute iteration of the BATS model (as done for hourly time periods). The problem with this method is best illustrated by an example as follows: if zone 1 employs 100 workers and zone 2 employs 100 workers, then a 15-minute iteration would predict an equal number of workers going to both zones during any 15-minute time period because both have equal demographic variables. However, 75 persons might go to zone 1 and 25 to zone 2 during a 15-minute time period. In order to represent this situation, 15-minute shift counts may be input to the computer and these will override the demographic variable × coefficient generation of trips to each zone. Thus, it is possible to input 75 employees for zone 1 and 25 employees for zone 2. The shift counts are input and stored in the array SHFPCT(Z,M,I) for each zone Z, for attractions or productions M, and for each 15-minute period of an hour I.

The final step is to use gate counts to predict peak 15-minute traffic for other than shift trips, which are defined as FLEX TIME (flexible arrival/departure time) trips. Persons who make flex time trips choose when they will arrive at work. A "flex time pool" is defined to include all non-shift time trips, and use 15-minute gate counts to allocate the flex time pool to those zones associated with gates that are most heavily used during each 15 minutes.

We compute GAFRO and GAFRD, the fraction of hourly trips to a zone Z produced or attracted during a 15-minute time period:

$$GAFRO = \frac{\sum^{AG} GCNT15(G,1,I)}{\sum^{AG} GCOUNT(1,G)}$$

$$GAFRD = \frac{\sum^{AG} GCNT15(G,2,I)}{\sum^{AG} GCOUNT(2,G)}$$

where:

AG = all gates G associated with zone Z

GGNT15(G,J,I) is the 15-minute gate count exiting (J=1) through gate G, during time period I

GCOUNT(J,G) is the hourly gate count exiting (J=1) through gate G, during time period I.

Note that when there is only one gate, GAFRO and GAFRD apply to all zones. When there are two gates, GAFRO could have three values, one for zones associated with gate 1, one for zones associated with gate 2 and one for zones associated with gates 1 and 2.

We next compute FRACO and FRACD, the fraction of the hourly flex-time pool productions or attractions coming from or going to a zone Z:

$$FRACO = \frac{\left(NTO(Z,1) - \sum_{I=1}^{4} SHFPCT(Z,1,I)\right)}{\sum^{all\ IZ} \left(NTO(IZ,1) - \sum_{I=1}^{4} SHFPCT(IZ,1,I)\right)}$$

$$FRACD = \frac{\left(NTD(Z,1) - \sum_{I=1}^{4} SHFPCT(Z,2,I)\right)}{\sum^{all\ IZ} \left(NTD(IZ,1) - \sum_{I=1}^{4} SHFPCT(IZ,2,I)\right)}$$

FRACO × GAFRO × SFTO is the fraction of the hourly flex-time pool, SFTO, coming from zone Z during a 15-minute period.

$$\text{where } SFTO = \sum^{all\ IZ} \left(NTO(IZ,1) - \sum_{I=1}^{4} SHFPCT(IZ,1,I)\right)$$

$$SFTD = \sum^{all\ IZ} \left(NTD(IZ,1) - \sum_{I=1}^{4} SHFPCT(IZ,2,I)\right)$$

The number of trips coming from any zone Z during a 15-minute time period I is then:

$$NTO(Z,1) = FRACO \times SFTO \times GAFRO + SHFPCT(Z,1,I)$$

The number of trips going to any zone Z during a 15-minute time period I is:

$$NTD(Z,1) = FRACD \times SFTD \times GAFRD + SHFPCT(Z,2,I)$$

2.4.3 Trip Distribution Function

Thus far, the NTO(Z,K) and NTD(Z,K) arrays have been developed. These arrays store the person-trips originating from or destined to a zone Z for the trip purpose K. The distribution function determines the proportion of the NTO(Z,K) trip origins going to every other zone in the network, and it determines the proportion of the NTD(Z,K) trip destinations coming from every other zone in the network.

One of the widely used methods of distributing trips is through the use of a "gravity" function, so named from Newton's second law of motion, which states that the attraction between two bodies is directly proportional to the product of their masses and indirectly proportional to the square of the distance between them. The trip distribution function assumes that the trip attraction between two zones is directly proportional to the product of the number of trip origins and trip destinations and indirectly proportional to a function of the travel time between them.

On an air base, another variable must be considered in the function--the number of vehicles traveling through each gate to the base. More than one trip travel time between zones is possible; each trip may go through one or more gates on the base. The problem faced in defining a distribution function for an air base was to use the gate counts to get a more accurate distribution of trips and to route the correct number of trips between each pair of zones.

Previous studies of traffic at the air bases (Nellis, 1971; Tinker, 1967) provided data that could be used to determine the function of gate counts and travel time on vehicle distribution. A study of trip travel patterns at Nellis AFB showed that trips made from gate to employment zones were indirectly proportional to travel time cubed.

The Nellis AFB study predicted the number of vehicles traveling from each of four gates to each of twelve work zones. The number of vehicles going from each gate to each destination zone was projected from interviews with approximately one-third of the vehicles using the gates during the morning rush hour and documented in the 1971 Traffic Engineering Study.

The studies at Tinker AFB, Nellis AFB, and other bases showed that employees tended to use a gate near to their zone of employment and employees tended not to double back in their route, i.e., drive beyond an employment zone while off base and back to the zone while on base. One modification to the distribution procedure was suggested by these studies. This would lower attraction to a zone from a gate when trips within the base retrace their trip while approaching the base; in other words, when vehicles must drive past their destination zone in order to use a certain entrance gate.

A trip distribution function that is inversely proportional to off-base travel time plus on-base travel time cubed, and directly proportional to gate counts appears to satisfy the constraints of the problem. The equations used in the GRAVO subroutine (which performs the trip distribution function) are described in the following paragraphs. A flowchart of the function is given in Figure 4.

The two ends of the trips are in exterior zones Z and interior zones Z1; that is, the equations handle trips that originate in Z and go to Z1 and that originate in Z1 and go to Z.

The number of trips between Z and Z1 is considered to be directly proportional to the fraction of the total destined for Z1. (This assumes that employees do not choose their housing location based on their zone of employment.)

$$\mathrm{ZGT} = \sum^{\text{all K}} \mathrm{NTO(Z,K)} \times \mathrm{NTD(Z1,K)} \Big/ \sum^{\text{all Z1}} \mathrm{NTD(Z1,K)}$$

$$\mathrm{ZAT} = \sum^{\text{all K}} \mathrm{NTD(Z,K)} \times \mathrm{NTO(Z1,K)} \Big/ \sum^{\text{all Z1}} \mathrm{NTO(Z1,K)}$$

Then ZGT is the total number of trips leaving from zone Z for zone Z1 and ZAT is the total number of trips going to zone Z from zone Z1.

Let TT(Z,G) be the travel time from zone Z to gate G. Then the fraction of ZGT or ZAT that uses any gate is proportional to FSOD1 or FSOD2:

$$\mathrm{FSOD1(G)} = \frac{\mathrm{GCNT15(G,1,ITM)}}{\mathrm{TT(Z,G) + TT(Z1,G)}^3}$$

$$\mathrm{FSOD2(G)} = \frac{\mathrm{GCNT15(G,2,ITM)}}{\mathrm{TT(Z,G) + TT(Z1,G)}^3}$$

where GCNT15(G,1,ITM) is the 15-minute gate count exiting gate G during the ITM time period, and GCNT15(G,2,ITM) is the 15-minute gate count entering gate G. So ZGT × FSOD1(G) is the gravity function applied to any gate for a pair of zones Z and Z1.

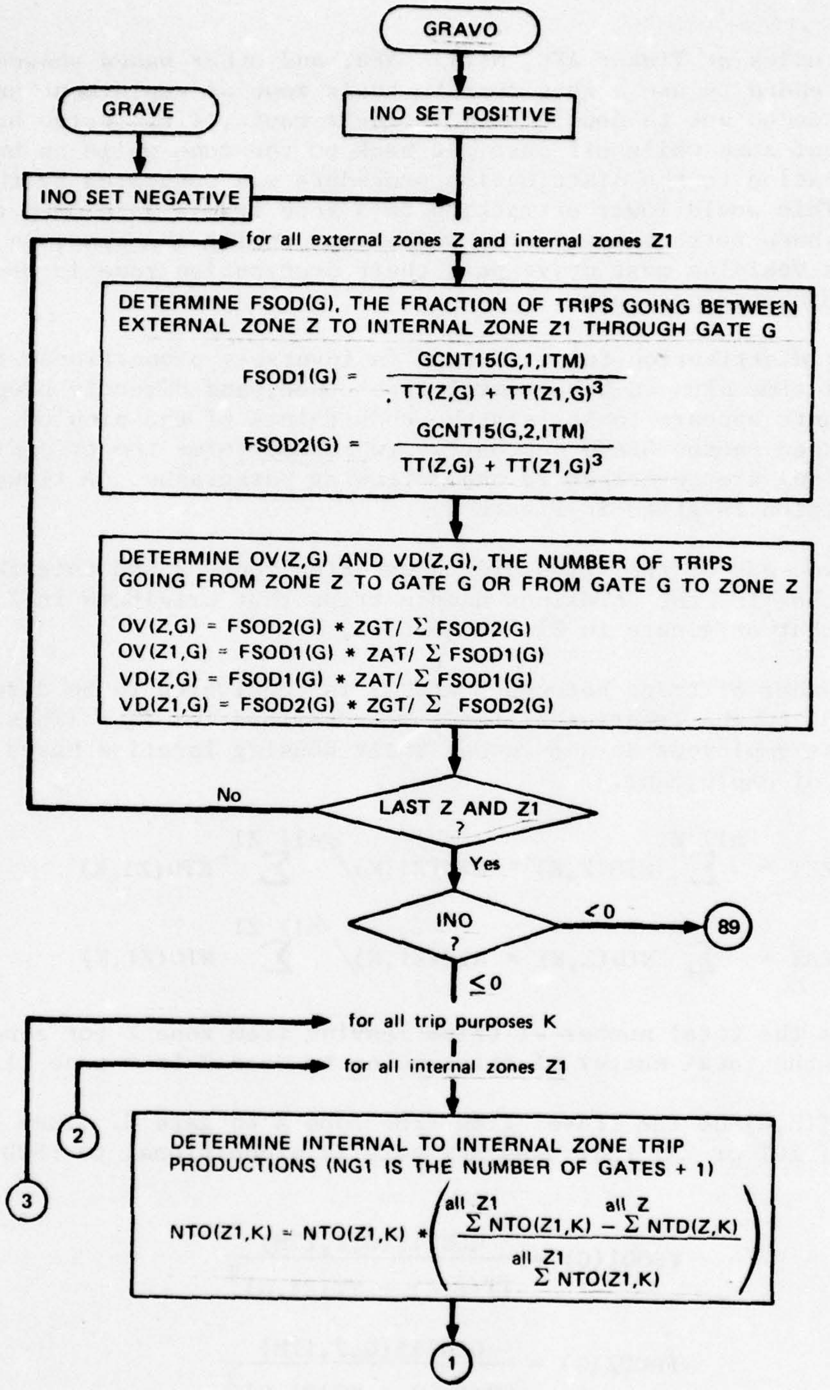

FIGURE 4. FLOW CHART FOR TRIP DISTRIBUTION FUNCTION

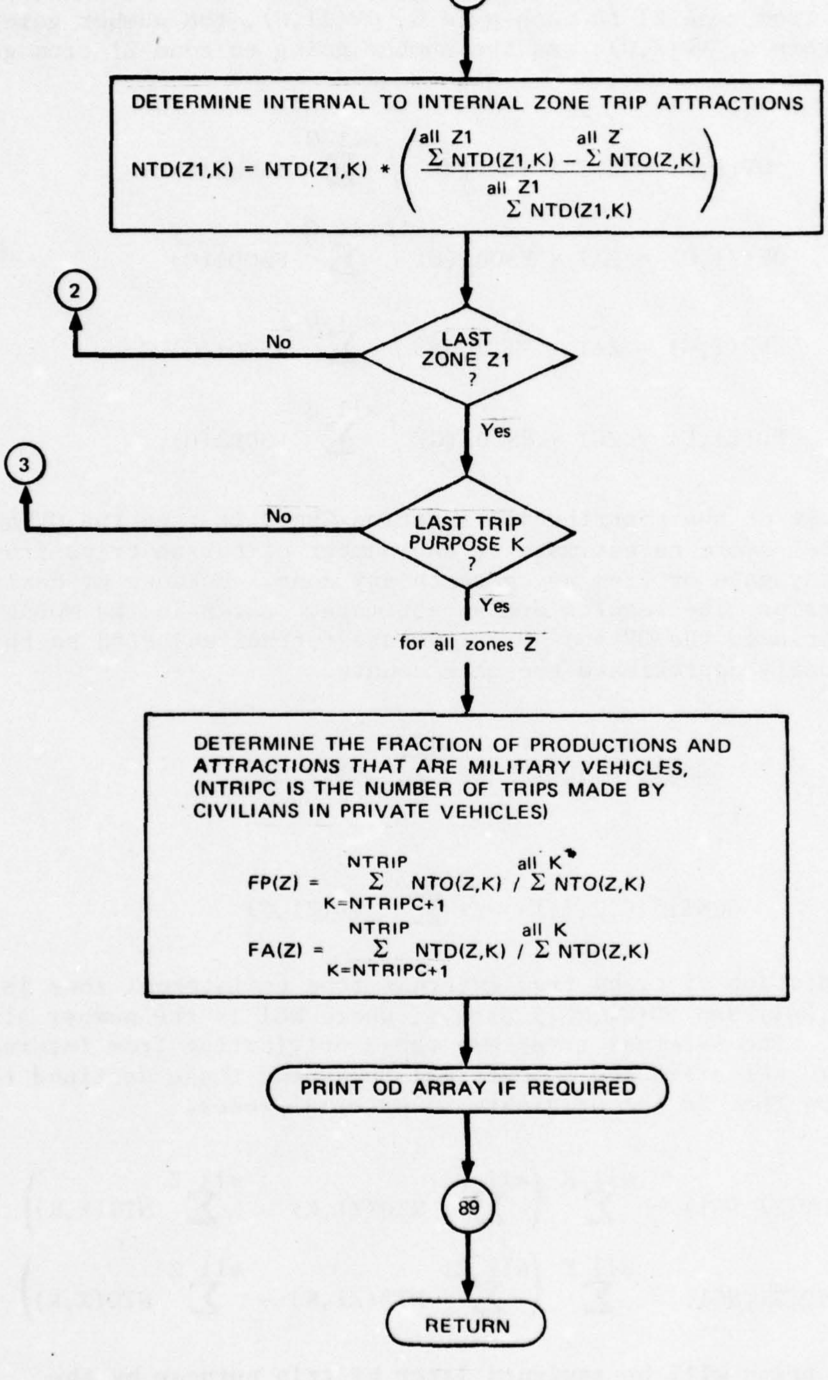

FIGURE 4. FLOW CHART FOR TRIP DISTRIBUTION FUNCTION (Concluded)

The function still must be normalized so that the sum of the ZGT × FSOD1(G) will equal ZGT. In performing the normalization the model computes the number going from zone Z to each gate G, OV(Z,G), the number going from zone Z1 to each gate G, OV(Z1,G), the number going to zone Z from gate G, VD(Z,G), and the number going to zone Z1 from gate G, VD(Z1,G).

$$OV(Z,G) = ZGT \times FSOD2(G) \Big/ \sum^{\text{all } G} FSOD2(G)$$

$$OV(Z1,G) = ZAT \times FSOD1(G) \Big/ \sum^{\text{all } G} FSOD1(G)$$

$$VD(Z,G) = ZAT \times FSOD1(G) \Big/ \sum^{\text{all } G} FSOD1(G)$$

$$VD(Z1,G) = ZGT \times FSOD2(G) \Big/ \sum^{\text{all } G} FSOD2(G).$$

The result of the distribution function GRAVO is then the OV and VD arrays which store an estimate of the number of person trips from any zone to any gate or from any gate to any zone. Because of dealing with person trips, the results are an estimate. Later in the MODAL and SMOOTH subroutines, the OV and VD arrays are further adjusted so that they more closely approximate the gate counts.

$$GCNT15(G,1,ITM) = \sum^{\text{all } Z} OV(Z,G)$$

and

$$GCNT15(G,2,ITM) = \sum^{\text{all } Z1} VD(Z1,G)$$

The prediction of trips from internal zone to internal zone is stored in the OV(Z1,NG1) and VD(Z1,NG1) arrays, where NG1 is the number of gates plus 1. The internal trips are those originating from internal zones that are not attracted to external zones and those destined to internal zones that do not originate in external zones.

$$\sum^{\text{all } Z1} OV(Z1,NG1) = \sum^{\text{all } K} \left(\sum^{\text{all } Z1} NTO(Z1,K) - \sum^{\text{all } Z} NTD(Z,K) \right)$$

$$\sum^{\text{all } Z1} VD(Z1,NG1) = \sum^{\text{all } K} \left(\sum^{\text{all } Z1} NTD(Z1,K) - \sum^{\text{all } Z} NTO(Z,K) \right)$$

The internal trips will be assigned later by trip purpose by the assignment function. Thus, the NTO and NTD arrays are updated to represent internal trips by trip purpose. The equations that redefine NTO and NTD are:

$$NTO(Z1,K) = \frac{\sum^{all\ Z1} NTO(Z1,K) - \sum^{all\ Z} NTD(Z,K) \times NTO(Z1,K)}{\sum^{all\ Z1} NTO(Z1,K)}$$

$$NTD(Z1,K) = \frac{\sum^{all\ Z1} NTD(Z1,K) - \sum^{all\ Z} NTO(Z,K) \times NTD(Z1,K)}{\sum^{all\ Z1} NTO(Z1,K)}$$

2.4.4 Mode Split Function

The mode split function is the third major step in the transportation planning methodology, and converts person trips to vehicles. Vehicle load factors are used to determine the number of autos and trucks used to make trips. Bus and bicycle traffic is handled relatively easily; bicycles are considered to have a load factor of 1, and buses have a load factor that is specified by input data. Figure 5 is a flowchart of the mode split function.

The number of bus passengers is subtracted from the OV,VD demands as the first step in this subroutine. The bus load factor is given by VLFM(7) and the number of buses associated with any zone Z is VTYPM(7,Z). Thus, the number of persons using the bus when leaving any zone is:

$$F1 = VLFM(7) \times VTYPM(7,Z)$$

It is possible to let the computer determine the bus load factor based on the number of buses servicing the zone and the number of trips from the zone. If VLFM(7) is zero, then the number of bus passengers in an hour is:

$$F1 = VTYPM(7,Z) \times (OV(Z,NG1) + VD(Z,NG1))/36$$

The constant 36-person trips bus trip was derived to fit the general information available on bus loadings on air bases.

The load factor for each type of vehicle, I, is given by VLF(I) for civilian vehicle trips or VLFM(I) for military vehicle trips. VEHTYP(I,Z) gives the percent of vehicles of type I associated with zone Z and VHTYPM(I,Z) gives the percent of military vehicles of type I; $\sum^{all\ I}$ VEHTYP(I,Z) can be less than 100 and this difference represents the percentage of nonmotorized trips made from or to the zone.

To compute vehicle trips for zone Z, we first determine SPPH1 and SPPH2, the number of persons occupying 100 vehicles (bicycle riders are included).

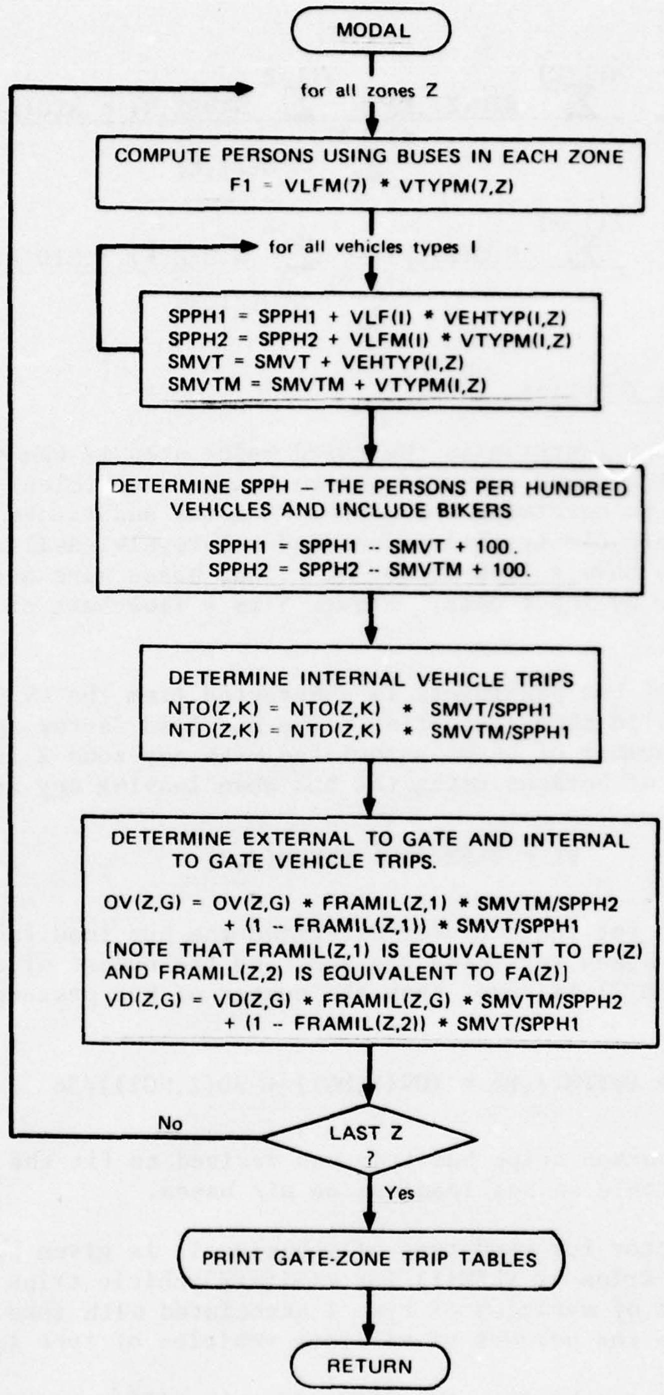

FIGURE 5. FLOW CHART FOR MODE SPLIT FUNCTION

$$SPPH1 = \sum^{\text{all } I} VLF(I) \times VEHTYP(I,Z) + 100 - \sum^{\text{all } I} VEHTYP(I,Z)$$

$$SPPH2 = \sum^{\text{all } I} VLFM(I) \times VHTYPM(I,Z) + 100 - \sum^{\text{all } I} VHTYPM(I,Z)$$

Then person trips are converted to vehicle trips in the OV, VD, NTO and NTD arrays:

$$NTO(Z,K) = NTO(Z,K) \times \sum^{\text{all } I} VEHTYP(I,Z)/SPPH1$$

$$NTD(Z,K) = NTD(Z,K) \times \sum^{\text{all } I} VEHTYP(I,Z)/SPPH1$$

$$OV(Z,G) = OV(Z,G) \times \left(FRAMIL(Z) \times \sum^{\text{all } I} VHTYPM(I,Z)/SPPH2 + (1 - FRAMIL(Z)) \times \sum^{\text{all } I} VEHTYP(I,Z)/SPPH1\right)$$

$$VD(Z,G) = VD(Z,G) \times \left(FRAMIL(Z) \times \sum^{\text{all } I} VHTYPM(I,Z)/SPPH2 + (1-FRAMIL(Z))\right) \times \sum^{\text{all } I} VEHTYP(I,Z)/SPPH1$$

where FRAMIL(Z) is the fraction of military vehicles making trips through the gates from or to zone Z.

2.4.5 Calibration Using Gate Counts

The unique fact about an air base that can contribute to the accuracy of the model is that external traffic must travel through gates to get on-base. The gate counts for each base gate act the same as "cordon line" counts, which are typically used in a transportation planning process to calibrate a model. In calibration, modeled results are corrected to more closely approximate results obtained from field measurement. In BATS this function serves to account for those trips that were not modeled using the data inputs. A flowchart of the principal subroutine SMOOTH is shown in Figure 6.

From previous routines or functions, the OV(Z,G), VD(Z,G) arrays that store the vehicle trips going from zone Z to gate G and from gate G to zone Z, respectively, have been established. Defining all Z as exterior zones and Z1 as interior zones, calibration coefficients are determined as follows:

$$FEXGEN(ITM) = \sum^{\text{all } Z} \sum^{\text{all } G} OV(Z,G) \Big/ \sum^{\text{all } G} GCNT15(G,2,ITM)$$

where FEXGEN is the fraction of external generations created by the model and traveling through the gates and GCNT15(G,2,ITM) are the 15-minute (or hourly) counts of the vehicles entering gate G during time period ITM (ITM=1 for hourly iterations).

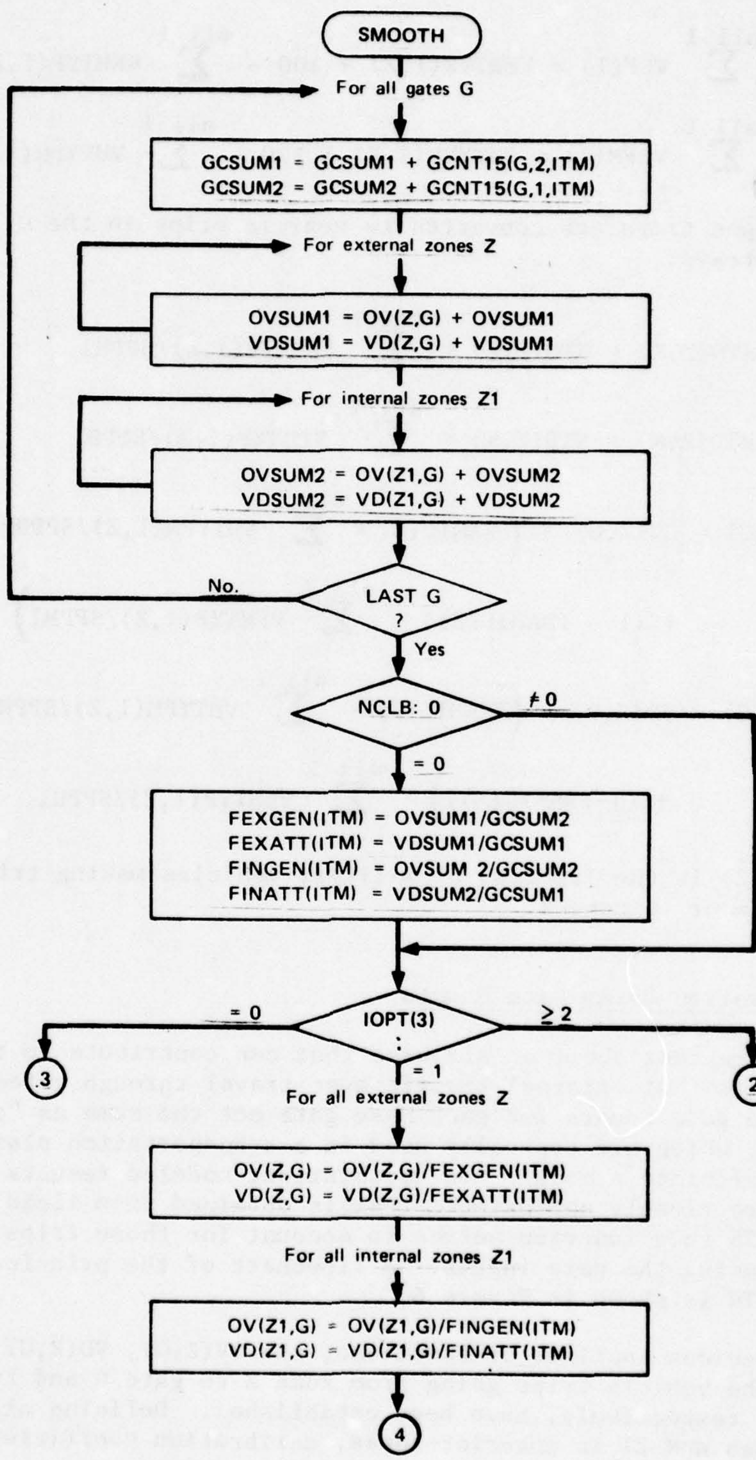

FIGURE 6. FLOW CHART FOR CALIBRATION FUNCTION

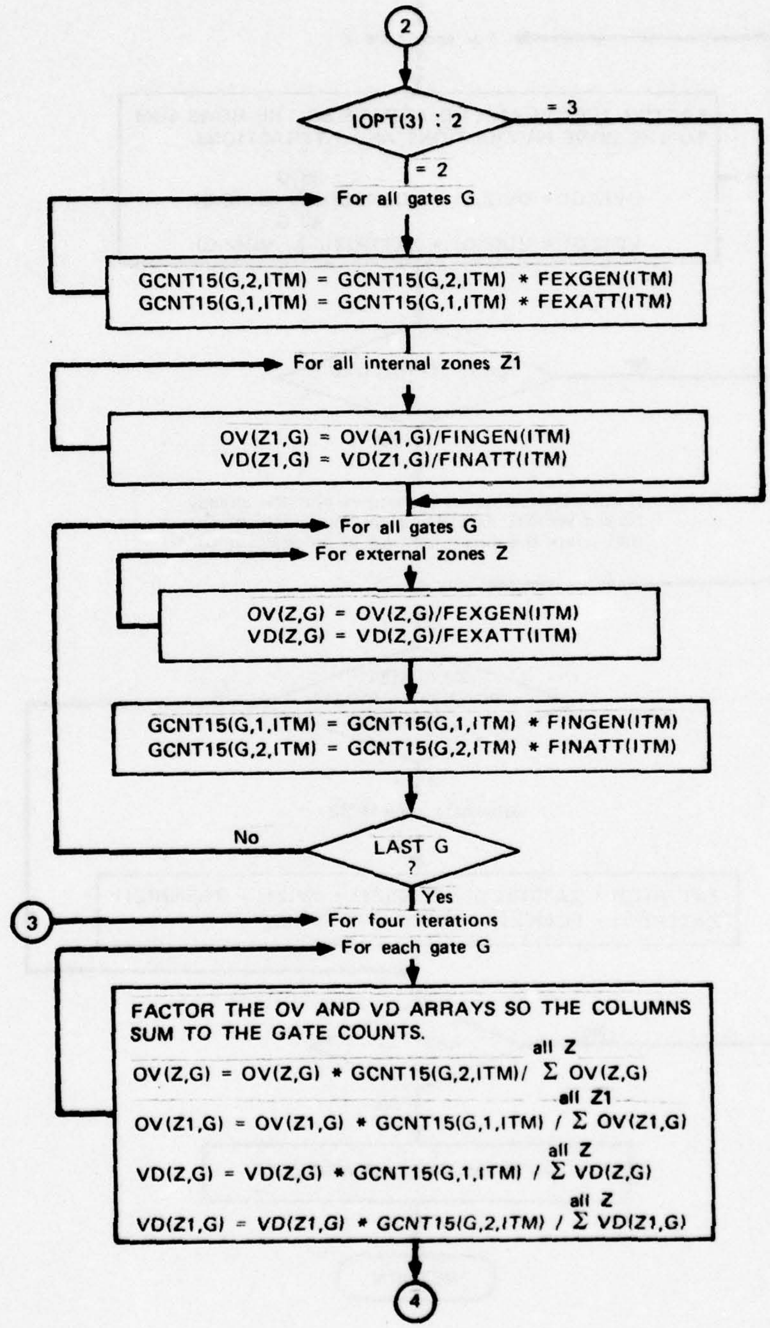

FIGURE 6. FLOW CHART FOR CALIBRATION FUNCTION (Continued)

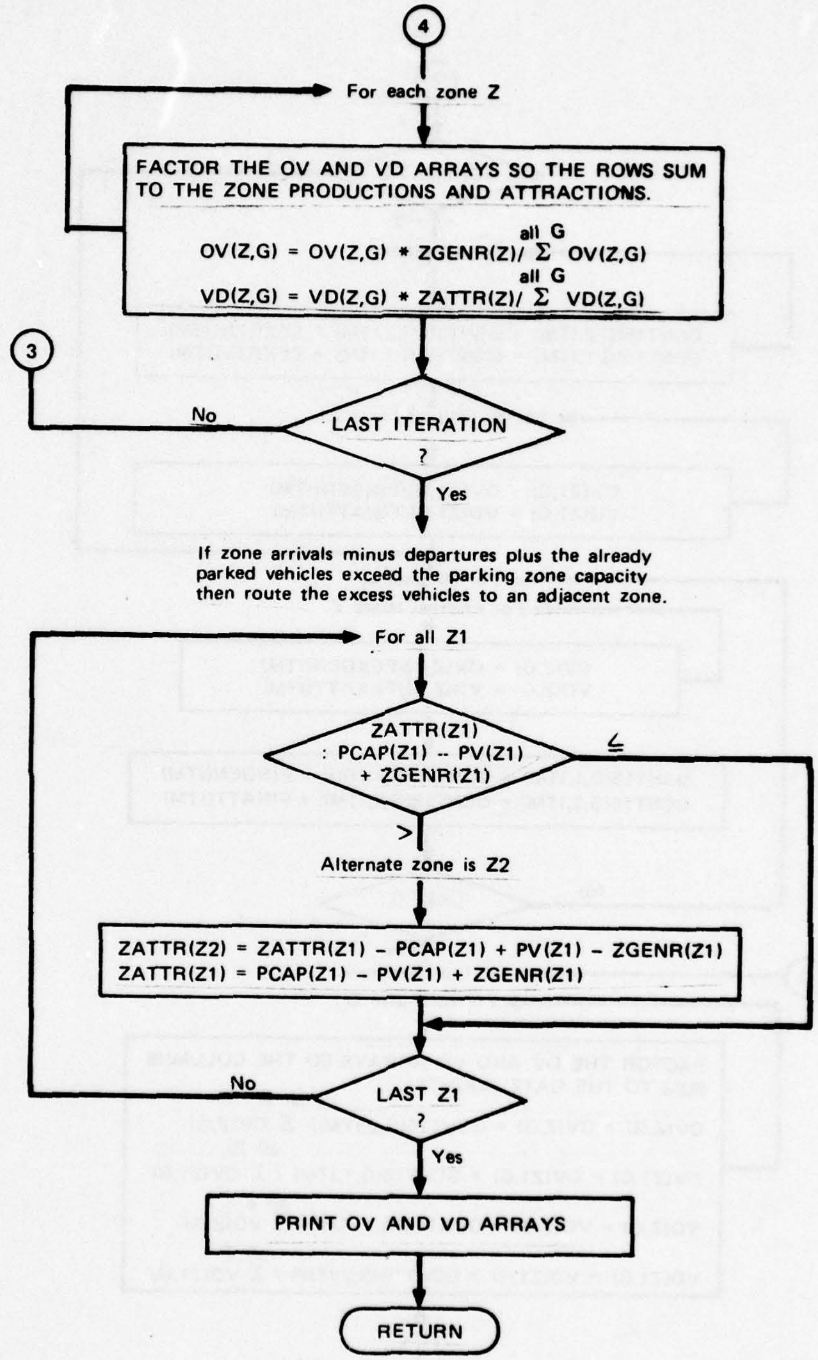

FIGURE 6. FLOW CHART FOR CALIBRATION FUNCTION (Concluded)

Similarly, FEXATT, the fraction of the total external attractions created by the model, FINGEN, the fraction of the total internal generations created by the model, and FINATT, the fraction of the total internal attractions created by the model are computed.

$$\text{FEXATT(ITM)} = \sum^{\text{all Z}} \sum^{\text{all G}} \text{VD(Z,G)} \Big/ \sum^{\text{all G}} \text{GCNT15(G,1,ITM)}$$

$$\text{FINGEN(ITM)} = \sum^{\text{all Z1}} \sum^{\text{all G}} \text{OV(Z1,G)} \Big/ \sum^{\text{all G}} \text{GCNT15(G,1,ITM)}$$

$$\text{FINATT(ITM)} = \sum^{\text{all Z1}} \sum^{\text{all G}} \text{VD(Z1,G)} \Big/ \sum^{\text{all G}} \text{GCNT15(G,2,ITM)}$$

If the user chooses to calibrate the model to the gate counts, then the elements of the OV and VD arrays are updated by applying the FEXGEN, FEXATT, FINGEN, and FINATT factors as follows:

$$\text{OV(Z,G)} = \text{OV(Z,G)/FEXGEN(ITM)}$$

$$\text{VD(Z,G)} = \text{VD(Z,G)/FEXATT(ITM)}$$

$$\text{OV(Z1,G)} = \text{OV(Z1,G)/FINGEN(ITM)}$$

$$\text{VD(Z1,G)} = \text{VD(Z1,G)/FINATT(ITM)}$$

The user selects the option making external-to-internal and internal-to-external trip productions and attractions total to the gate counts. The user also has the option of making external productions total to internal attractions, or of making internal productions total to external attractions. The user may also input the FEXGEN, FEXATT, FINGEN, and FINATT values when gate counts are not available for a predictive run.

The GRAVO subroutine predicts the number of person trips through each gate, using the gate counts at each gate as a weighting factor. The total number of entering or exiting vehicles now sums to the gate counts if the calibration factors have been applied. Further calibration adjusts the OV and VD arrays to gate counts so that the sum of the OV going through any gate G more nearly equals the count at gate G. This step is accomplished using a matrix multiplication scheme. Travel time is not considered to be a factor any longer, and the number using each gate is most important.

The matrix multiplication is a two-step procedure: (1) factor all elements so that the column sums for external zone productions add up to the entering gate counts, the column sums for internal zone productions add up to the exiting gate counts, the column sums for external attractions add up to exiting gate counts, and the column sums for internal attractions add up to entering gate counts; (2) factor all elements so that row sums for each zone equal the initial row sums for each zone. Thus, the initial row sums of productions from each zone are saved:

$$\text{ZGENR(Z)} = \sum^{\text{all G}} \text{OV(Z,G)}$$

The elements are factored so that the columns sum to the gate counts:

$$\mathrm{OV(Z,G)} = \mathrm{OV(Z,G)} \times \mathrm{GCNT15(G,2,ITM)} \Big/ \sum^{\text{all Z}} \mathrm{OV(Z,G)}$$

$$\mathrm{OV(Z1,G)} = \mathrm{OV(Z1,G)} \times \mathrm{GCNT15(G,1,ITM)} \Big/ \sum^{\text{all Z1}} \mathrm{OV(Z1,G)}$$

where Z are external zones and Z1 are internal zones. The elements are factored so that row sums for each zone equal initial row sums.

$$\mathrm{OV(Z,G)} = \mathrm{OV(Z,G)} \times \mathrm{ZGENR(Z)} \Big/ \sum^{\text{all G}} \mathrm{OV(Z,G)}$$

Similarly for zone attractions, the initial row sums to each zone are saved:

$$\mathrm{ZATTR(Z)} = \sum^{\text{all G}} \mathrm{VD(Z,G)}$$

The elements are factored so that the columns sum to the gate counts:

$$\mathrm{VD(Z,G)} = \mathrm{VD(Z,G)} \times \mathrm{GCNT15(G,1,ITM)} \Big/ \sum^{\text{all Z}} \mathrm{VD(Z,G)}$$

$$\mathrm{VD(Z1,G)} = \mathrm{VD(Z1,G)} \times \mathrm{GCNT15(G,2,ITM)} \Big/ \sum^{\text{all Z1}} \mathrm{VD(Z1,G)}.$$

$$\mathrm{VD(Z,G)} = \mathrm{VD(Z,G)} \times \mathrm{ZATTR(Z)} \Big/ \sum^{\text{all G}} \mathrm{VD(Z,G)}$$

Four iterations of this procedure, using Nellis AFB data, produced OV and VD matrices in which the column sums were nearly equal to the gate counts. BATS is programmed to perform the matrix multiplication four times.

The final step in the calibration function is to reroute vehicles to alternative lots, away from parking lots that are filled to capacity. The ZGENR(Z1) array is made to store all trips produced from each internal zone Z1, and the ZATTR(Z1) array is made to store all attractions to each internal zone Z1 by adding the internal-to-internal zone trips to these arrays:

$$\mathrm{ZGENR(Z1)} = \mathrm{ZGENR(Z1)} + \sum^{\text{all K}} \mathrm{NTO(Z1,K)}$$

$$\mathrm{ZATTR(Z1)} = \mathrm{ZATTR(Z1)} + \sum^{\text{all K}} \mathrm{NTD(Z1,K)}$$

where NTO and NTD store the number of internal origins going to internal destinations and the number of internal destinations coming from internal origins, respectively. The vehicles that use parking places are of type 1, 2 and 3, so we generate ZM(Z1) and VZ(Z1), the number of parked vehicles originating in zone Z1 and the number of vehicles wishing to park in zone Z1, respectively.

$$\text{ZV(Z1)} = \text{ZGENR(Z1)} \times \sum_{\text{I}=1}^{3} \text{VEHTYP(I,Z1)} \Big/ \sum^{\text{all I}} \text{VEHTYP(I,Z1)}$$

$$\text{VZ(Z1)} = \text{ZATTR(Z1)} \times \sum_{\text{I}=1}^{3} \text{VEHTYP(I,Z1)} \Big/ \sum^{\text{all I}} \text{VEHTYP(I,Z1)}$$

If the capacity of the lot is exceeded, then excess vehicles are routed to a parking zone that has a link in common with the overcapacity zone, and the VZ and ZATTR trip attractions arrays are updated to reflect this rerouting. The rerouting is made to an adjacent zone, or if none exists to the zone with the greatest unused capacity.

2.4.6 Assignment Function

This part of the transportation planning methodology assigns vehicles to the links of the network. Vehicle trips are assigned to the minimum path routes between each origin and gate, each gate and destination, and each internal-internal zone pair. Vehicle type data, including civilian or military vehicles, are maintained for each link. Data on hot, cold, and stabilized vehicles are also accumulated for each link. When a truck route has been specified, the vehicles of the appropriate type are routed on the truck route instead of the minimum path route. The arrays that store the minimum path and the minimum path cost (or travel time) are the R(L), C(L), RG(G,L) and CG(G,L).

The R array stores the link previous to L in the route from the zone of origin to link L. Thus, if R(6) = 4, the route from the zone of origin to link 6 passes over link 4. When R(L) = 0, there are no other links in the route, so the link L accesses the origin zone. The RG(G,L) array is like the R(L) array, only it stores the link previous to L in the route from gate G to link L. The cost array C(L) stores the cost (or travel time) from the origin zone to link L, and CG(G,L) stores the cost (or travel time) from gate G to link L. Figure 7 is a flowchart of the assignment subroutine ASSIGN.

The assignment takes place in four steps:

(1) For each zone Z the R(L) and C(L) arrays are determined.

(2) For each gate G the OV(Z,G) vehicles are routed onto the links of the path from zone Z to gate G, and the VD(Z,G) vehicles are routed from the gate G onto the links of the two alternate paths to zone Z.

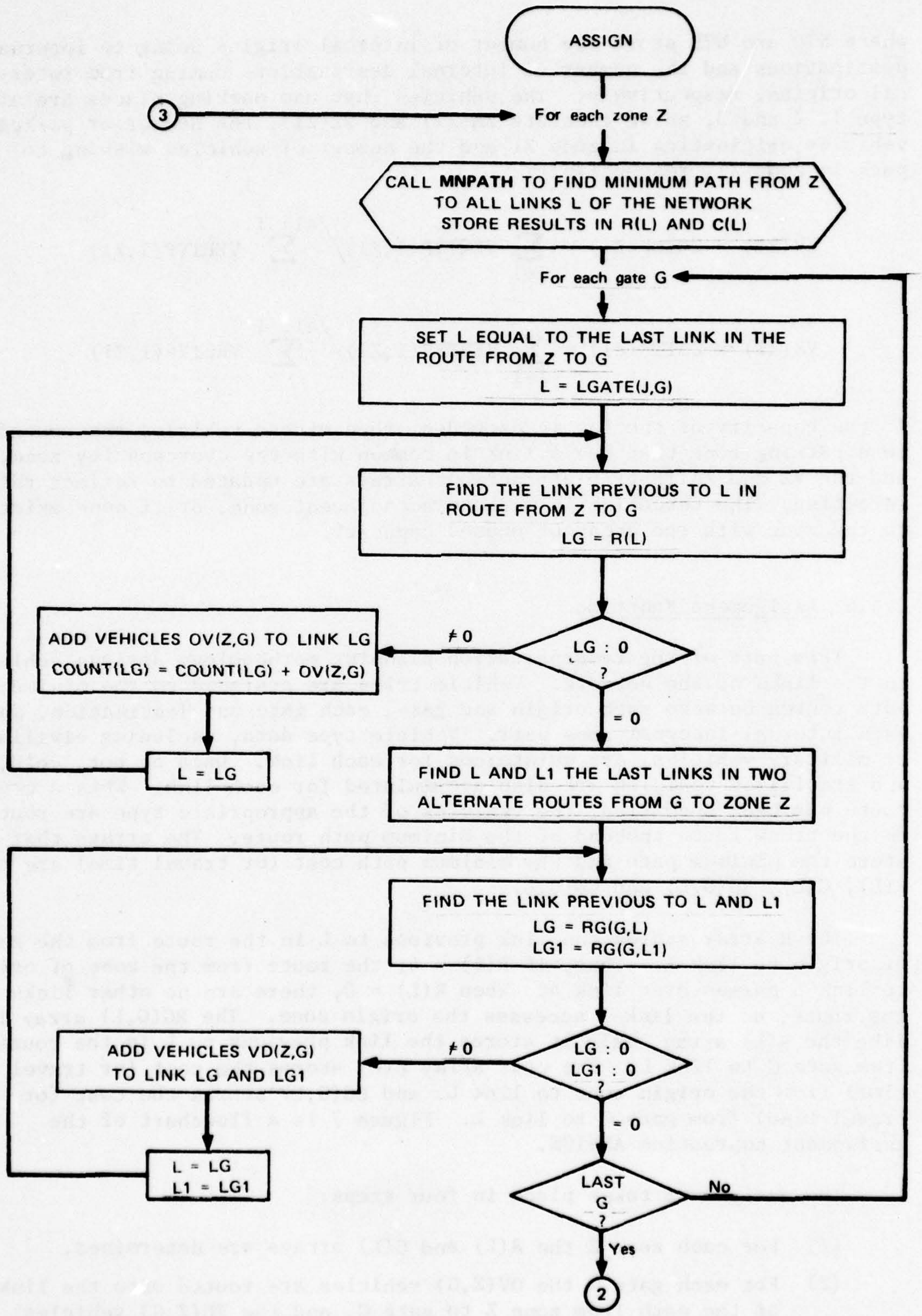

FIGURE 7. ASSIGNMENT OF VEHICLES TO NETWORK

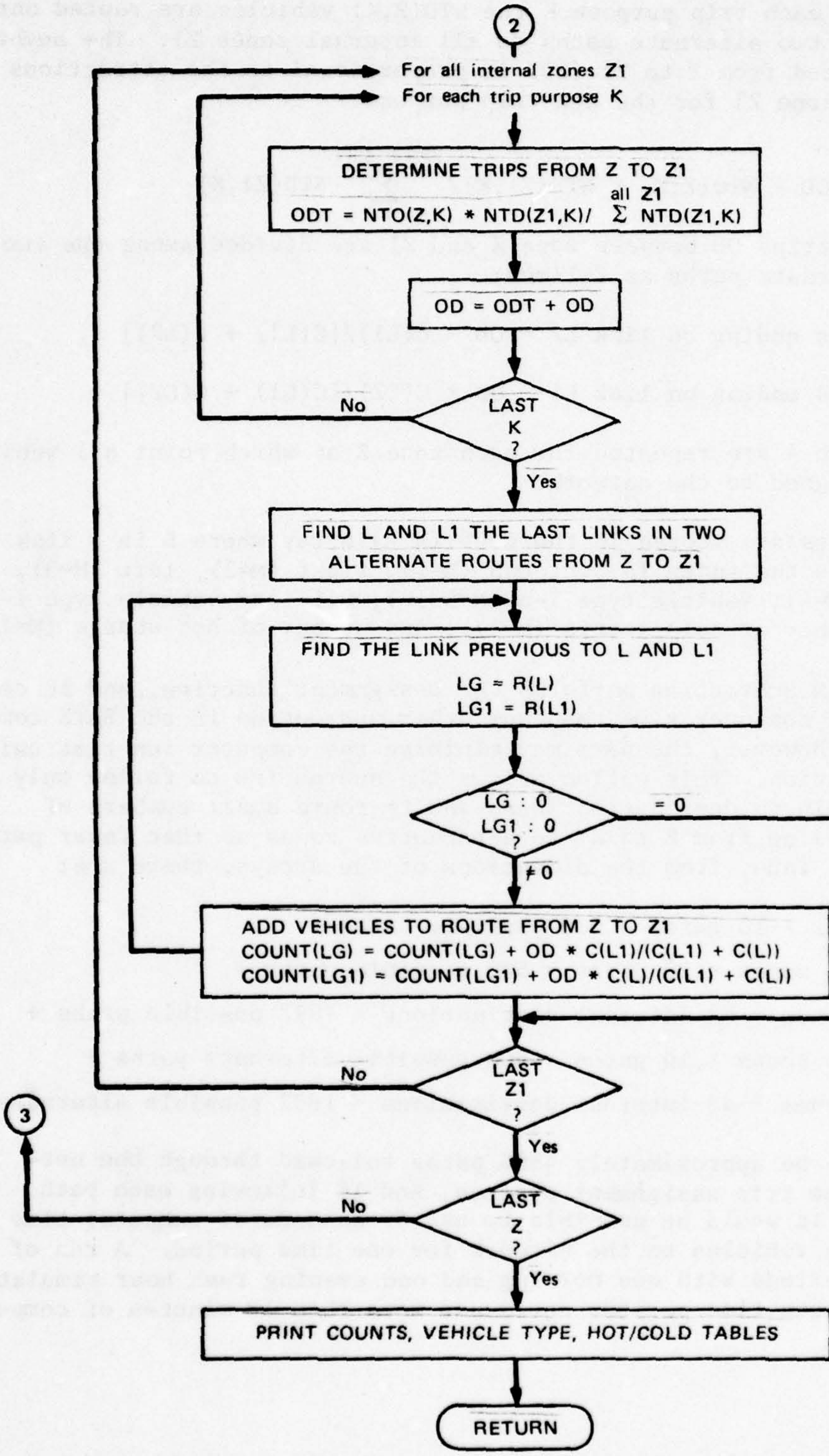

FIGURE 7. ASSIGNMENT OF VEHICLES TO NETWORK (Concluded)

(3) For each trip purpose K the NTO(Z,K) vehicles are routed onto the two alternate paths to all internal zones Z1. The number routed from Z to Z1 (OD) is proportional to the attractions to zone Z1 for the Kth trip purpose.

$$OD = NTO(Z,K) \times NTD(Z1,K) \Big/ \sum^{\text{all } Z1} NTD(Z1,K)$$

(4) The trips OD between zone Z and Z1 are divided among the two alternate paths as follows:

Trips ending on link L2 = OD × C(L1)/[C(L1) + C(L2)]

Trips ending on link L1 = OD × C(L2)/[C(L1) + C(L2)]

Steps 1 through 4 are repeated for each zone Z at which point all vehicles have been assigned to the network.

The results are stored in the COUNT(M,L) array where L is a link number and M is the index for through (M=1), right (M=2), left (M=3), terminating (M=4), vehicle type 1-6 (M=5-10), military vehicle type 1-6 (M=11-16), number of cold starts (M=17), and number of hot starts (M=18).

The ASSIGN subroutine performs the assignment function, and it consumes far more computer time than any other subroutine in the BATS computer model. However, the user may minimize the computer run time using the IOPT(5) option. This option allows the subroutine to follow only one path from origin to destination zones and to route small numbers of vehicles traveling from Z to Z1 to alternative zones so that fewer paths are followed. Thus, from the dimensions of the arrays, there are:

50 origin zones × 10 gates = 500 possible paths +

50 destination zones × 10 gates = 500 possible paths +

44 internal zones × 43 internal destinations = 1892 possible paths +

50 destination zones × 10 gates = 500 possible alternate paths +

44 internal zones × 43 internal destinations = 1892 possible alternate paths.

There can be approximately 4500 paths followed through the network during the trip assignment process, and if following each path takes 10 msec it would be possible to use 45 seconds of computer time just assigning vehicles to the network for one time period. A run of 12 hourly time periods with one morning and one evening rush hour simulated by four 15-minute time periods could use more than 13 minutes of computer run time.

2.5 Traffic Flow Analysis

2.5.1 General Methods

General traffic flow analysis covers such subjects as network theory, traffic assignment, queueing theory, interrupted and uninterrupted flow theory, surveillance, and control. The analysis of traffic in and about an indirect source such as an air base principally involves traffic assignment, queueing theory, and street and parking lot flow. Traffic analysis at an air base may be based on simplistic methods, which generally use hand calculations, or on sophisticated methods, which generally involve computer modeling. Hand calculations used in traffic flow analysis suffer from being cumbersome and insensitive to some major parameters of a typical traffic network.

Manual analytical procedures for vehicle behavior in and around indirect sources, such as an air base with most pollution generated by aircraft or motor vehicles (EPA Guidelines, 1978; Thayer and Axetell, 1973), recognize the need to model individual segments of a vehicle's journey, but the modeling of intersections, parking lot running time, and vehicle routing into and out of a parking lot are very simplified. The simplification is justifiable to keep hand computations to a minimum, but such simplification may lead to significant inaccuracies in modeling the unusual circumstances that are typical of worst-case conditions. For example, assume a fairly congested exit gate that leads to a signalized intersection operating at near capacity with a cycle length of 1.5 minutes and a red phase-to-cycle-length ratio of 0.5. A vehicle-actuated signal might operate at a 1.5-minute cycle length but could allocate more time to the green phase, thus effectively lowering the volume-to-capacity ratio and the travel time through the gate. The hand computation techniques, however, contain no provision for determining phase and cycle lengths of actuated signals.

From previous experience in modeling traffic networks using a large-scale, complex computerized model (Sandys, 1971; Sandys et al., 1975), the parameters that are the most important in prediction of flow on a network of streets have been isolated. Of major importance are intersection capacity, number of lanes, and number of left-turning vehicles; of less importance are street capacity and parking characteristics. On the basis of the major parameters, a simple street network flow model has been developed that automatically computes travel times based on trip demand, intersection capacities, optimum phase lengths for actuated signals, and parking lot travel times.

The traffic flow submodel is rerun for each time period that is specified (see Figure 8). A time period is specified as an input parameter and a situation is modeled during this time. Accumulations of vehicles in parking lots and queues on streets are retained and during subsequent time periods these act as initialization data for the subsequent iteration.

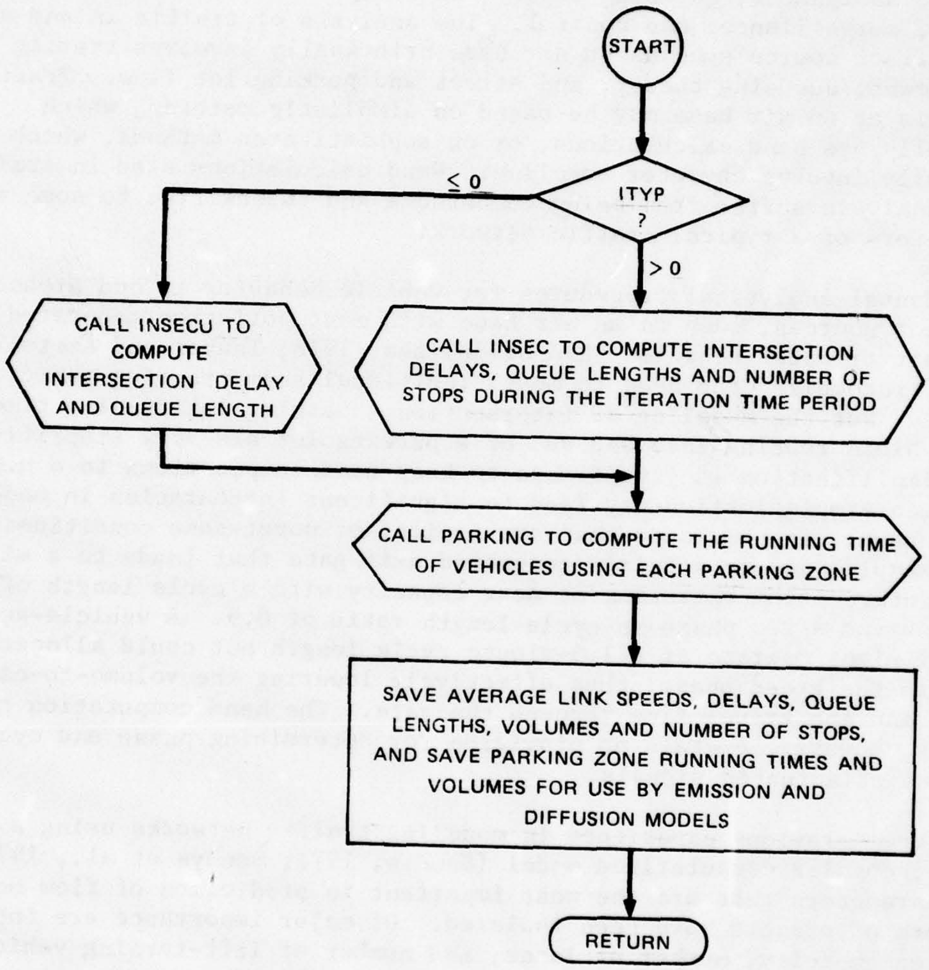

FIGURE 8. TRAFFIC FLOW ANALYSIS

2.5.2 Intersections

Traffic is assigned to the alternate routes on the basis of time delay and capacity; the resulting travel times and other measures of effectiveness, such as stops, delay, queue length, and flow, are then calculated. The delays at each intersection are calculated by a subroutine that models an intersection on the basis of traffic flow and physical characteristics. The intersection is modeled in a simple geometrical model (Figure 9) to permit many intersections and demand patterns to be simulated in a short time. The outputs of the subroutine are average vehicle delay and average queue length for each approach and turning movement at the intersection.

2.5.2.1 Signalized Interactions

The method of computing delay at a signalized intersection is based on an approximate method of computing delays and queues (Newell, 1965) in which the discrete nature of the cars is disregarded in favor of considering traffic as a continuous fluid, which arrives at a uniform rate (V), is dammed for a time (R), and is then released at a rate (S) until the dam is empty. Traffic thereafter moves out of the intersection at the arrival rate (V) provided the green time (G) is long enough.

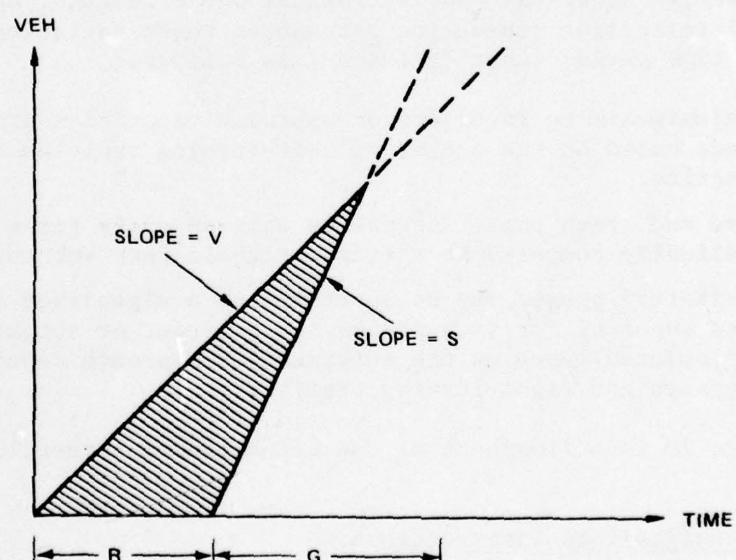

FIGURE 9. SIMPLE MODEL OF INTERSECTION DELAY

In Figure 9, the initial form of the subroutine, VEH, is the vehicle arrivals. The total delays for all vehicles during any time interval are represented by the interval bounded by the arrival and departure flow rates. The average delay (W) per vehicle is:

W = S*R*R/(2*(R + G)*(S - V))

Actually, vehicles rarely arrive at a uniform rate but tend to arrive in random small groups. In the model, a Poisson distribution has been assigned to this characteristic, and, when such arrivals occur, queues of vehicles form waiting to be serviced by the intersection. A second element of delay (i.e., queueing delay) must be added to the basic delay (W) caused by the gating of vehicles. This delay is based on the average queue length (Q), which is given by the equation:

Q = V/(2*G*S/(R + G) - V)

Then the average delay per vehicle is the delay due to the gating effect of the signal plus the time spent waiting in the queue of length Q, which is being serviced at a rate (S * G)/(R + G). Combining the delay per queued vehicle (which is the reciprocal of the service rate) with the queue length and combining this result with the average delay, the average delay per vehicle including delay due to queueing (D) is:

D = S*R*R/(2*(R + G)*(S - V)) + V*(R + G)**2/(2*S*G*(S*G - V*(R + G)))

The computing of delay at an intersection requires predetermination of intersection approach capacity, signal phase lengths, and cycle times. The BATS intersection subroutine recomputes these variables for each simulated time period (usually 1 hour) as follows:

- Adjustments to intersection approach capacities are automatically made based on the number of left-turning vehicles at an intersection.
- Red and green phase lengths as well as cycle times are automatically computed at actuated signals [see Webster (1958)].
- Left-turn phases may be specified at a signalized intersection, and capacity for such phases may be input or automatically calculated based on the intersection approach capacity for the through and right-turning traffic.

Figure 10 is a flowchart of the signalized intersection model.

2.5.2.2 Unsignalized Intersections

The intersection submodel will also predict delay and queue length at unsignalized intersections. As with a signalized intersection, a queue may be formed because of random arrivals at the intersection.

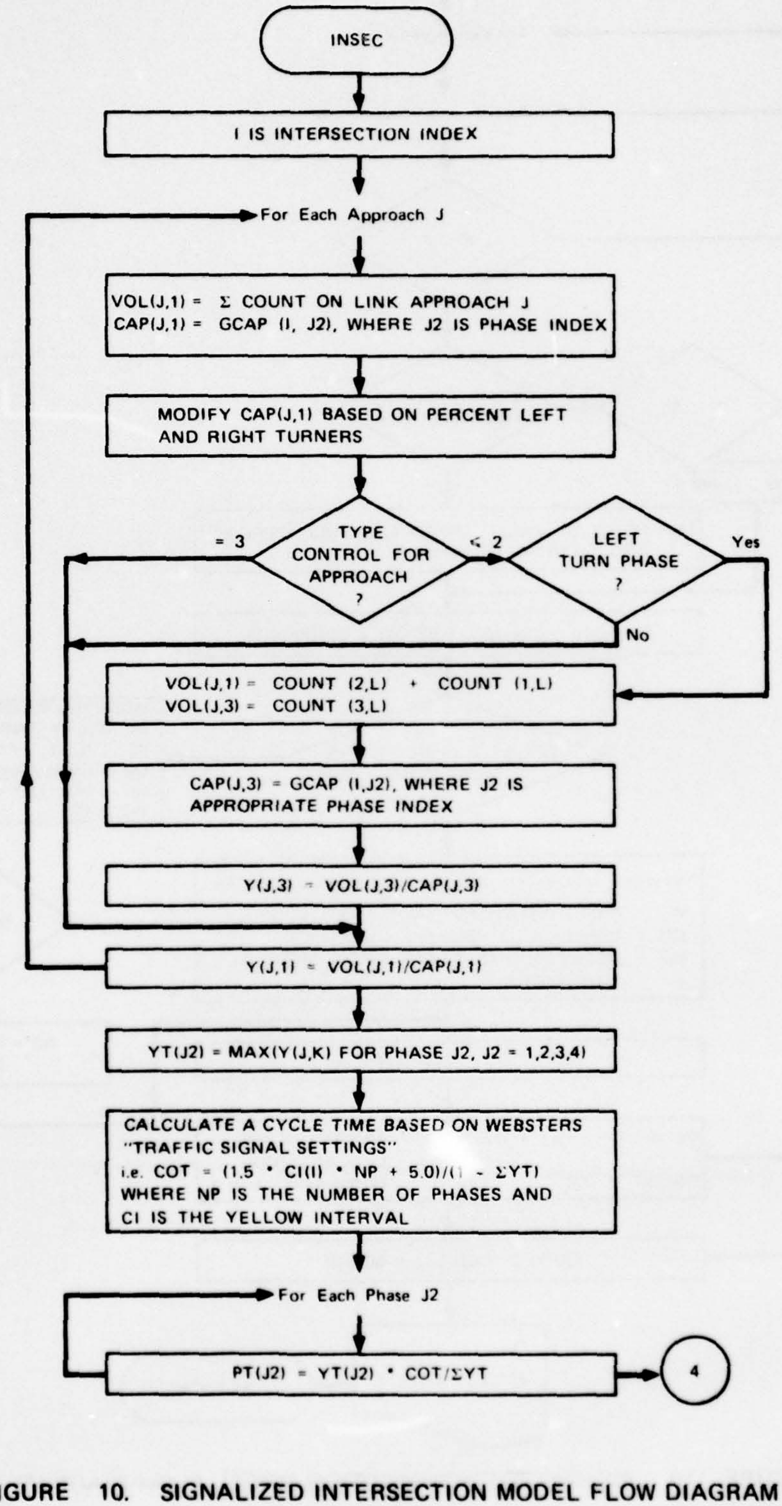

FIGURE 10. SIGNALIZED INTERSECTION MODEL FLOW DIAGRAM

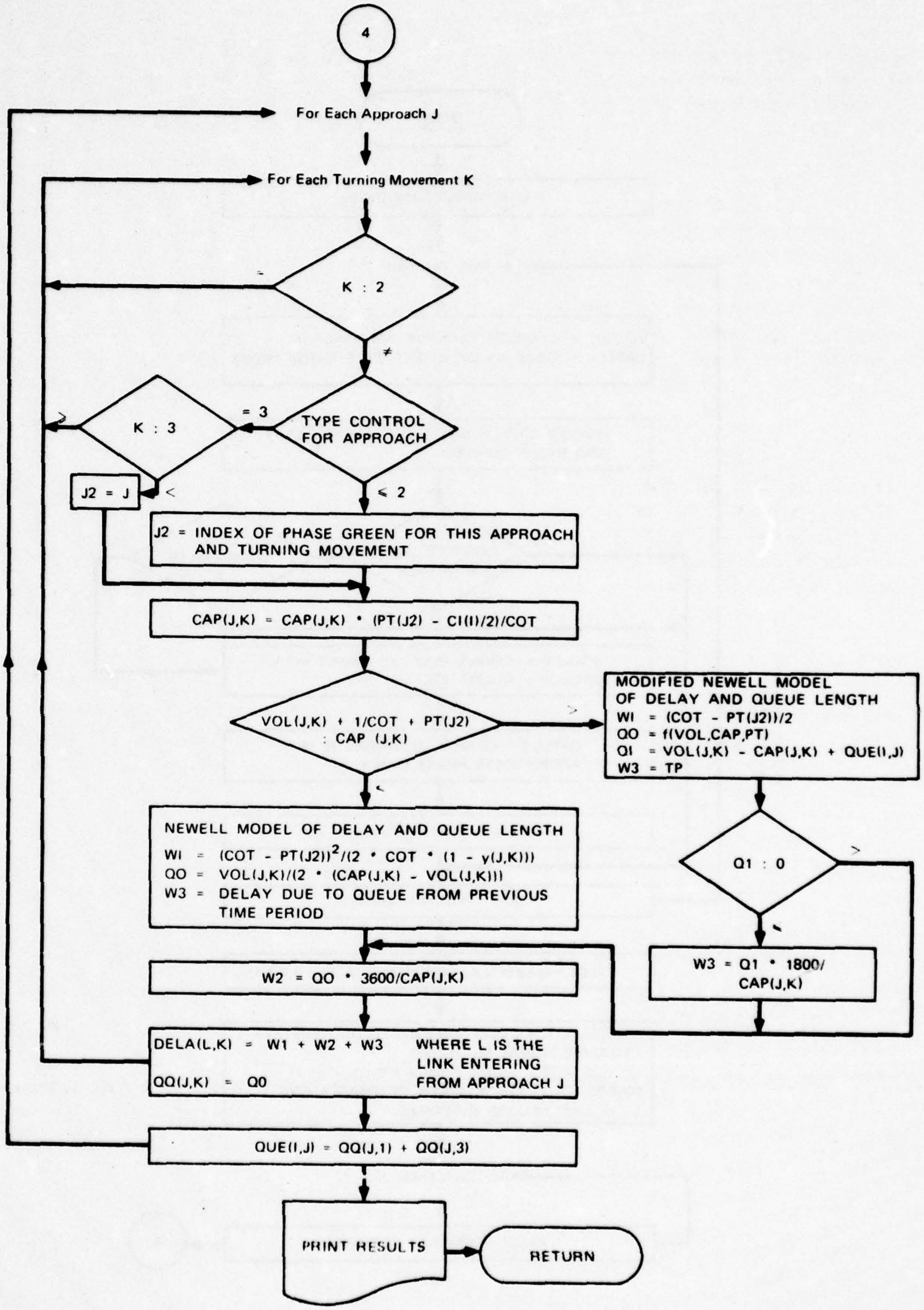

FIGURE 10. SIGNALIZED INTERSECTION MODEL FLOW DIAGRAM (Concluded)

If V is the arrival rate of vehicles at the intersection and C is capacity flow rate of vehicles departing the intersection, the average queue length is:

$$Q = V/(C - V)$$

The average delay experienced by vehicles at an unsignalized intersection is:

$$D = V/(C*(C - V))$$

Figure 11 is a flowchart of the unsignalized intersection model.

2.5.3 Parking Area

The EPA Guidelines (1978) recommend that a constant be added to the running times of each vehicle operating in a parking lot that is more than 80 percent filled. BATS is written to predict air pollution in a more realistic way. First, travel time is increased as a function of the percent of the parking lot that is filled. Second, when a zone is filled to capacity, vehicles that would have traveled to this zone are routed to the adjacent zone or to the zone with the next highest potential for attracting trips. In this way, parking areas are filled in the order of their potential and when filled operate under capacity-flow conditions.

The parking area subroutine predicts running time for the vehicles arriving or leaving each parking zone. Running time is divided into three parts:

- Time to travel to an open stall starting from the parking zone entrance or time to travel from a stall to the exit of the parking zone
- Queueing delay caused by one or more vehicles waiting for a vehicle to back out of a stall
- Delay to vehicles that drive around a parking zone looking for an empty stall either because of an unwillingness to park in a different zone or because there are no other alternative zones in which to park.

A flowchart of the parking lot subroutine is shown in Figure 12. Equations for each of the three elements of running time are as follows:

$$TT = PL/PLS$$

where

TT is travel time (sec) to vehicles either entering or leaving the parking zone

PL is the parking lot length (ft)

PLS is the average speed (ft/sec) of vehicles in the lot.

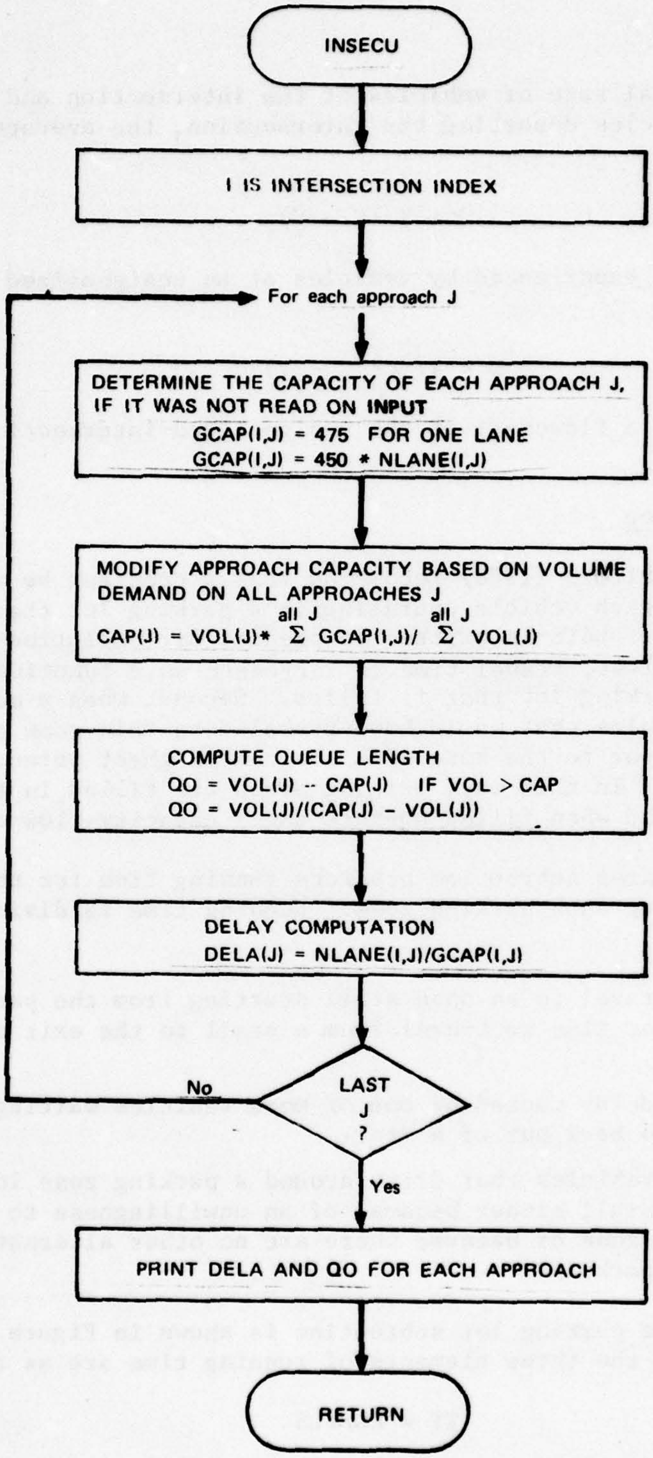

FIGURE 11. UNSIGNALIZED INTERSECTION MODEL FLOW DIAGRAM

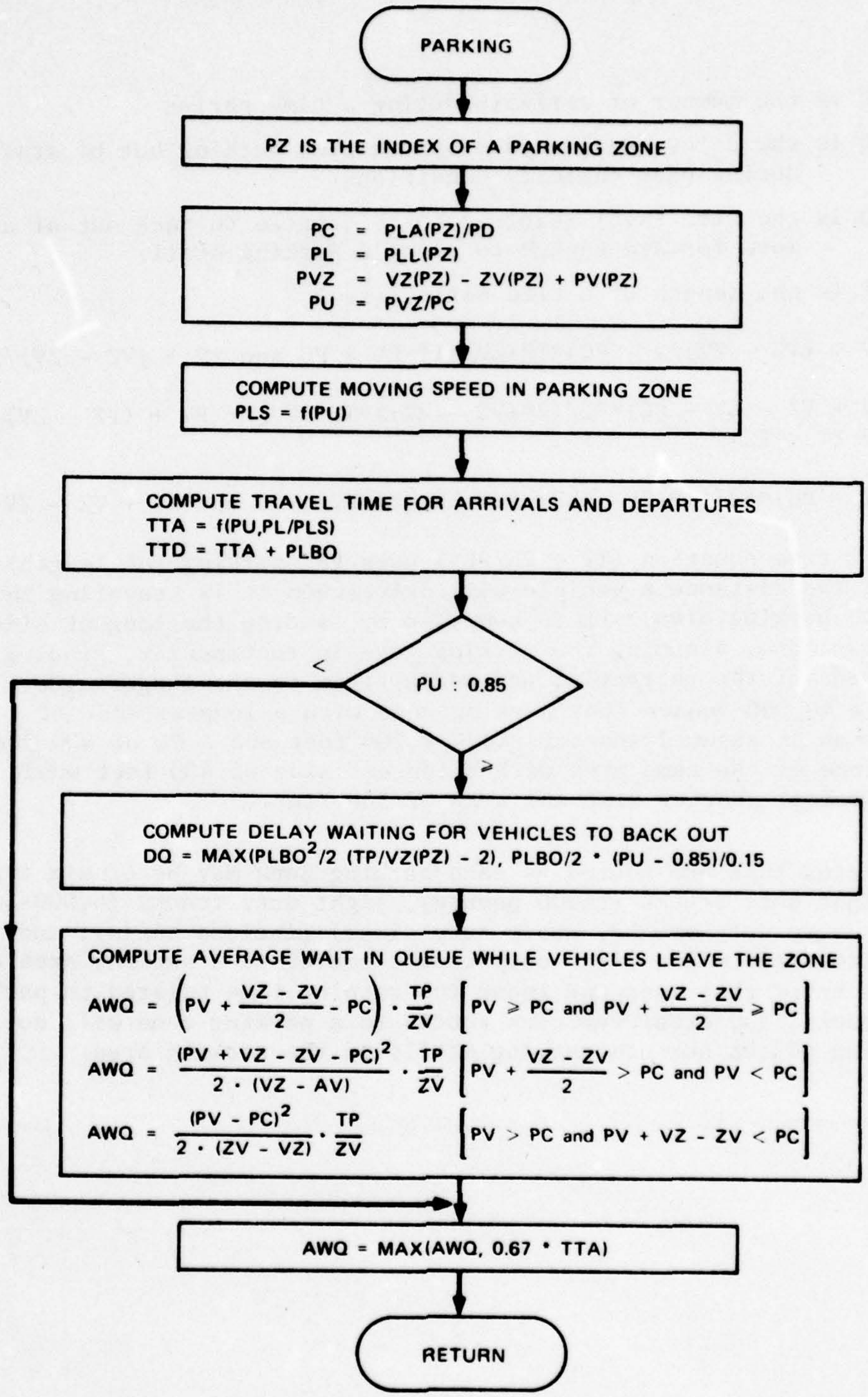

FIGURE 12. PARKING MODEL FLOW DIAGRAM

DQ = MAX(PLBO**2/(2*(TP/VZ - Z)) , PLBO/Z)

where

VZ is the number of arrivals during a time period

DQ is the delay (sec) caused by vehicles backing out of stalls during near capacity conditions

PLBO is the time (sec) required for a vehicle to back out of and move forward enough to clear a parking stall

TP is the length of a time period (sec)

AWQ = (PV + (VZ - ZV)/2 - PC)*TP/ZV [if PV ≥ PC and PV + (VZ - ZV)/2 ≥ PC]

AWQ = (PV + VZ - ZV - PC)**2/(2*(VZ - ZV))*TP/ZV [if PV + (VZ - ZV)/Z > PC and PV < PC]

AWQ = (PV - PC)**2/(2*(ZV - VZ))*TP/ZV [if PV > PC and PV + VZ - ZV < PC]

The travel time equation (TT = PL/PLS) uses PL (parking lot length) to represent the distance a vehicle will drive when it is traveling through the entire parking area. PL is computed by finding the longest side of the parking zone, assuming the parking zone is rectangular, finding the shorter side of the rectangle, and adding this to the longer side. For example, a 40,000-square foot parking zone with a longest side of 200 feet has an assumed shorter side of 200 feet and a PL of 400 feet, while a zone of the same area with a longest side of 400 feet would have a 100-foot shorter side and a PL of 500 feet.

Vehicles that are routed to each parking zone may be of six types: autos, light duty trucks (<6000 pounds), light duty trucks (6,000-8,500 pounds), heavy duty trucks, heavy duty diesel (include buses), and motorcycles. Autos and light duty trucks routed to a parking area or zone will enter that zone and incur the running time related to parking. Buses, trucks, and other vehicles routed to a parking zone will not look for parking places nor use parking stalls in the parking area.

SECTION III

DOCUMENTATION

This section documents each subroutine for the programmer or analyst who is using the BATS program. The documentation thus is useful to the computer professional who wishes to change a subroutine or to understand exactly what a subroutine does. The documentation of each subroutine includes a description of the purpose of the routine, a data description of the principal parameters used by each subroutine, the reports generated by the subroutine, and the subroutines called by this subroutine. The documentation of the main BATS program also includes a flow chart showing the major subroutine calls made by the BATS model.

3.1 BATS

3.1.1 Purpose

BATS calls the major functional subroutines and performs sequential iterations of the modeling process. The named and blank common areas are all defined in BATS and the default data are initialized. A flowchart of the BATS program is given as Figure 13. When the model was debugged, many supplementary FORTRAN statements were included in the code to generate additional information, and these statements have been made into comments by placing an "*" in column 1 on the printout. The normal comments in the program are made with a C in column 1. A complete program listing is presented in Appendix A.

3.1.2 Data Description

Common Name	Description of Data
/COMM/	Stores the general information about the run; provides a means of passing parameters, and stores the iteration variables which may be referenced by several different subroutines.
/CHD/	Holds the data which are output as the first line of each report.
/LINK/	Stores the parameters describing each link of the network; data are generally read from Card Type 2.
/INTRST/	Stores the parameters describing each intersection of the network; data are read from Card Type 3.
/ZONES/	Stores the parameters describing each zone. Some data are read from Card Type 4; other values such as ZATTR, ZGENR, and FCS are generated by subroutines.

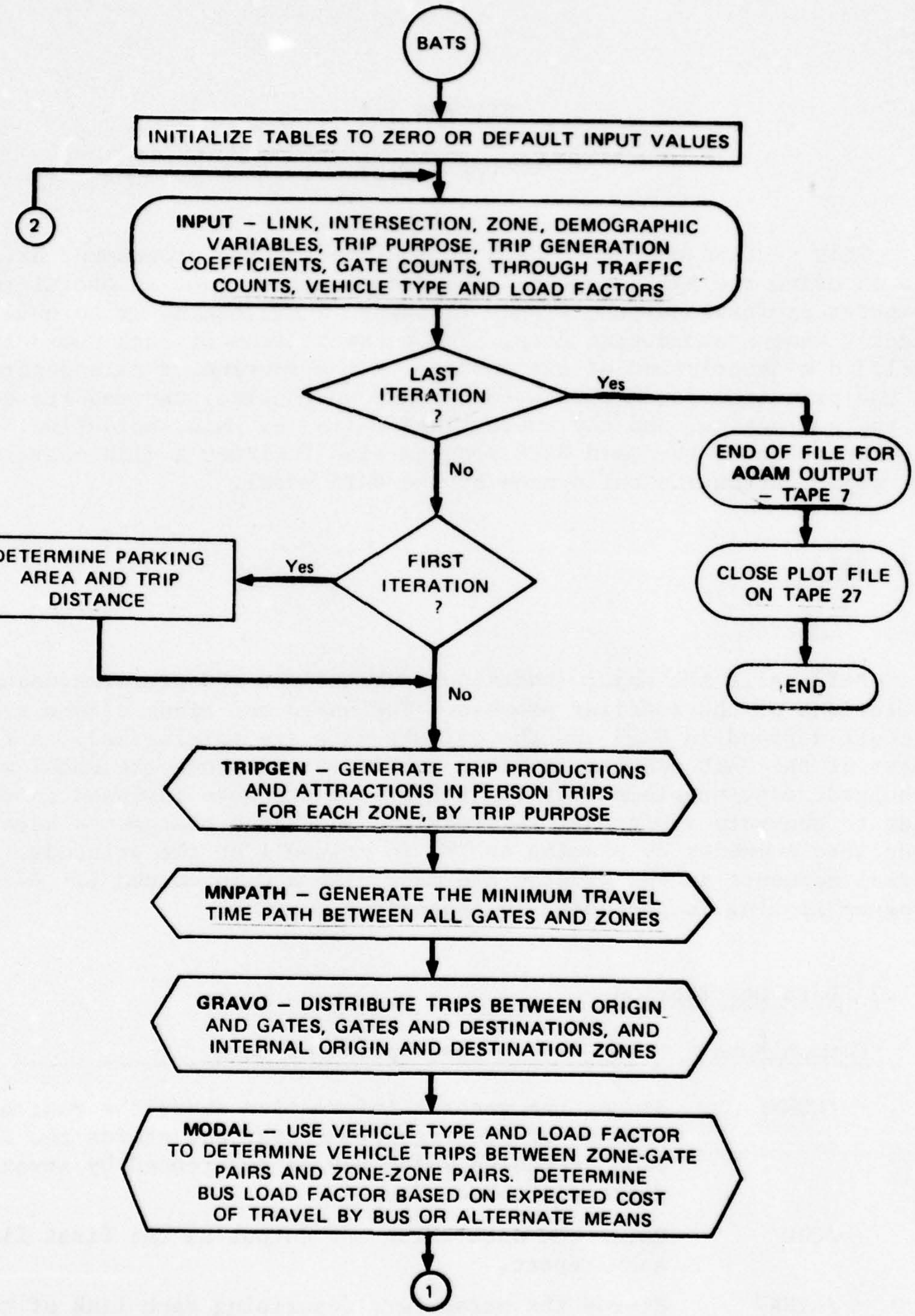

FIGURE 13. BATS FLOW CHART SHOWING MAJOR SUBROUTINES CALLED

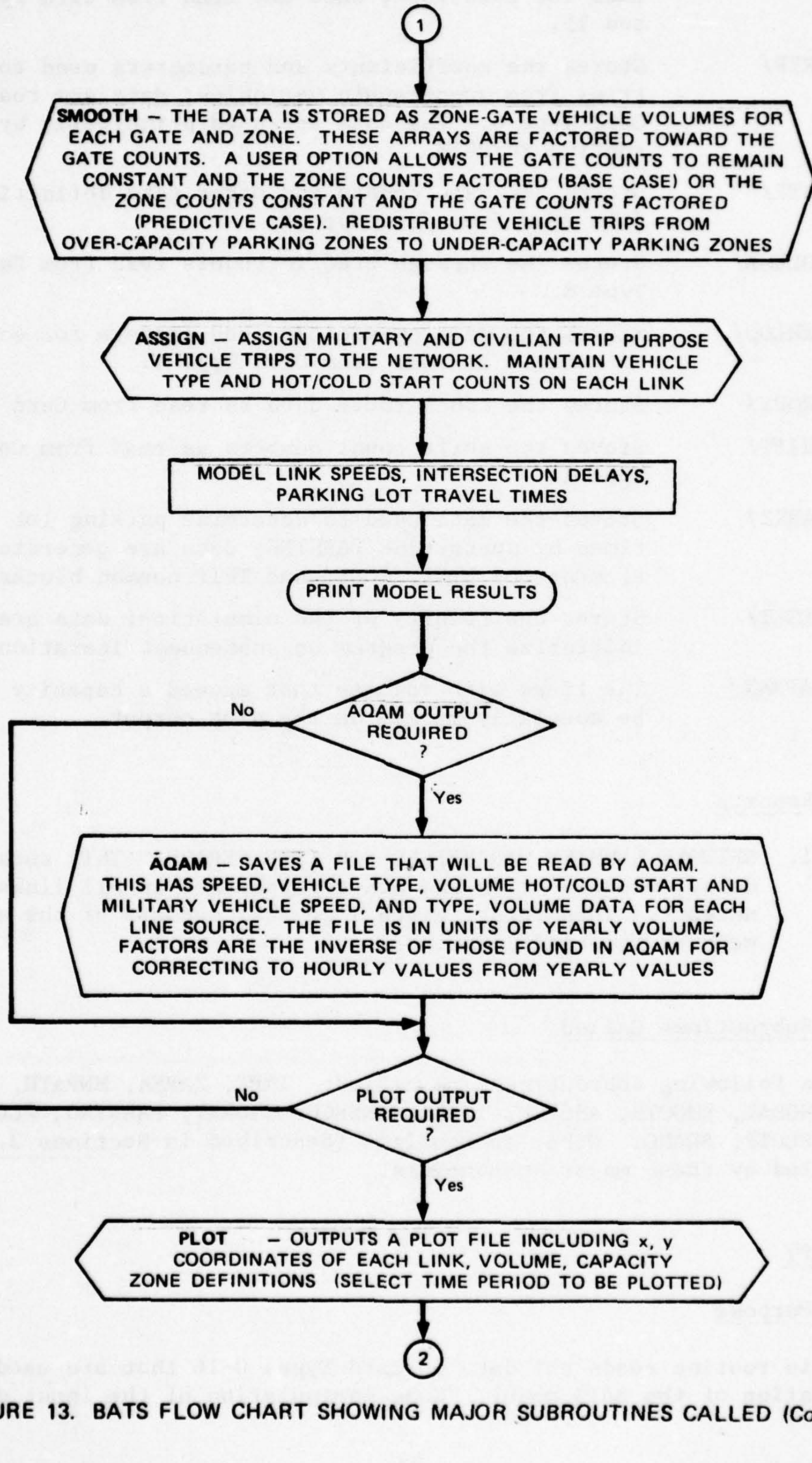

FIGURE 13. BATS FLOW CHART SHOWING MAJOR SUBROUTINES CALLED (Concluded)

/DEMVAR/	Stores the parameters to be used to generate trip ends for each zone; data are read from Card Types 5 and 15.
/TRIP/	Stores the coefficients and parameters used to generate trips from demographic variables; data are read from Card Type 6. The data are used principally by subroutine TRIPGEN.
/GATE/	Stores the gate counts and other gate definition data read from Card Type 7.
/VOLUME/	Stores the through traffic counts read from Card Type 8.
/VEHLOD/	Stores the data on vehicle load factors for each type of vehicle as read from Card Type 9.
/TROUT/	Stores the truck route data as read from Card Type 10.
/SHIFT/	Stores the shift count numbers as read from Card Type 11.
/PARKZ/	Stores the data used to determine parking lot running times by subroutine PARKING; data are generated from elements of LINK, ZONE, and TRIP common blocks.
/RESLT/	Stores the results of the simulation; data are used to initialize the program on subsequent iterations.
/CAPMAX/	The links with volumes that exceed a capacity will be specially marked on the plot output.

3.1.3 Reports

I.1. NETWORK SUMMARY PARAMETERS FOR TIME PERIOD. This totals delay, vehicle miles and other parameters on all links of the network. This report gives a general measure of the effectiveness of the traffic network.

3.1.4 Subroutines Called

The following subroutines are called: INPT, ZAREA, MNPATH, TRIPGEN, GRAVO, MODAL, SMOOTH, ASSIGN, INSEC, INSECU, COORXY, PARKING, PLOTI, PLOTA, PLOTP, AQAMQ. Other subroutines (described in Sections 3.18-3.37) are called by these major subroutines.

3.2 INPT

3.2.1 Purpose

This routine reads all data on Card Types 0-16 that are used to run an iteration of the BATS model. Some manipulation of the input data is

undertaken in INPT; for instance, x,y coordinates of link end points are converted to UTM (Universal Transverse Mercator)* coordinates. All input cards are printed out after being read, to tell the user where an input error occurred and to permanently record the input data used to produce the resulting reports.

3.2.2 Data Description

Table 1 describes all input variables, by input card type, field, format, symbol, dimensional units, value limits, default values, and variable description. Instructions for assembling the input data are contained in the "BATS--Field Data Collection and Reduction Guide" (Swope, et al., 1979).

3.2.3 Reports

The input data are listed using the same format specifications as used to read input cards.

3.2.4 Subroutines Called

The following subroutines are called: AQAMI, COORXY, LETTER, PLOT, PLOTI.

3.3 ZAREA

3.3.1 Purpose

This routine will compute the area of a 3 to 12 sided zone. It uses the first side of the zone to construct a trapezoid using the X axis and two sides parallel to the Y axis. Then it uses the second side to construct another trapezoid, and so forth, adding or subtracting the areas of the trapezoids created. This routine was part of the software on a programmable calculator, and is explained here more completely:

(1) The trapezoid rule states the area of a trapezoid is the total length of the parallel sides times the distance between them divided by 2.

(2) If X_1,Y_1, and X_2,Y_2 are the end points of a line segment used to define an area, then the area of the trapezoid with

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*See "AQAM--Field Data Collection Guide" (1975), page 10, for information on finding UTM coordinates of a point.

Table 1

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
0 Header	1-6	I6	NYEAR	--	710101 to 851231	741004	Date in Year, Month, Day Sequence
	7-26	A10,A2	LHEAD	--		Williams AFB	Base Name
	27-76	5A10	LHEAD	--	--		Run Identification
1	1-2	I2	IC	--	--	--	Card type number
	3-6	I4	NLINK	--	0* to 240	154 (previously stored value)	Number of cards of type 2 - Links
	7-10	I4	NINS	--	0* to 70	48 (previously stored value)	Number of cards of type 3 - Intersections
	11-14	I4	NZONES	--	0* to 50	23 (previously stored value)	Number of cards of type 4 - Zones
	15-18	I4	NDV	--	0* to 10	1 (previously stored value)	Number of cards of type 5 - Demographic Variables
	19-22	I4	NTRIP	--	0* to 10	7 (previously stored value)	Number of cards of type 6 - Trip Purposes
	23-26	I4	NGATE	--	0* to 10	7 (previously stored value)	Number of cards of type 7 - Gates
	27-30	I4	NCOUNT	--	0 to 240	15 (previously stored value)	Number of cards of type 8 - Link Counts
	31-34	I4	NVLF	--	0* to 2	26 (previously stored value)	Number of cards of type 9 - Vehicle Load Factor
	35-38	I4	NTR	--	0* to 4	1 (previously stored value)	Number of cards of type 10 - Truck Route
	39-42	I4	NS	--	0 to 24	12	Number of cards of type 11 - Shift Employees
	43	I1	NPLT	--	0 to 1	0	Number of cards of type 12 - Plot Options
	44	I1	NCLB	--	0 to 1	0	Number of cards of type 13 - Calibration Factors
	45	I1	NPLU	--	0 to 7	0	Number of cards of type 14 - PLUALU Array
	46	I1	NDEMVC	--	0 to 1	0	Number of cards of type 15 - Dem. Var. Names
	47	I1	NNAME	--	0 to 9	1	Number of cards of type 16 - Namelist Cards
	48-51	F4.0	TOD	hours	0 to 23	8	Hour of day
	52-54	F3.0	DOW	--	1 to 7	3	Day of week (Sun = 1, Mon = 2, ...Sat = 7)
	55-59	F5.0	TP	sec	900 to 86400	3600	Time period duration
	60-64	F5.0	TOTATT	vehicles	>0	124	Total trips attracted to and generated by the base during time period specified
	65-69	F5.0	TOTGEN	vehicles	>0	74	
	70	I1	XP	--	1 to 9	1	Exponent of external and internal travel time
	71	I1	YP	--	1 to 9	3	Exponent of internal travel time
	72	I1	IOPT(1)	--	0 to 6	4	Level of service
	73	I1	IOPT(2)	--	0 to 4	2	Plot option
	74	I1	IOPT(3)	--	0 to 3	1	Smoothing option
	75	I1	IOPT(4)	--	0 to 3	0	15-minute iterations flag
	76	I1	IOPT(5)	--	0 to 9	0	Minimize run time
	77	I1	IOPT(6)	--	0 to 2	2	AQAM output flag
	78	I1	IPFLG(1)	--	0 to 7	1	Print trip purpose tables
	79	I1	IPFLG(2)	--	0 to 7	1	Print O-D tables
	80	I1	IPFLG(3)	--	0 to 7	1	Print O-G and Assignment tables

Table 1 (Continued)

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
2	1-2	I2	IC	--	2	2	Card type number
	3-5	I3	L	--	0 to 240	1	Link number
	6-10	I5	NLAN	--	≥1	2	Number of lanes
	11-15	F5.0	X1(L)	Map units	>0	3751	x-coordinate of northernmost end point (easternmost if link runs E-W)
	16-20	F5.0	Y1(L)	Map units	>0	2363	y-coordinate of northernmost end point
	21-25	F5.0	X2(L)	Map units	>0	2247	x-coordinate of southernmost end point
	26-30	F5.0	Y2(L)	Map units	>0	2673	y-coordinate of southernmost end point
	31-35	I5	LCAP(L)	veh/hr	≥1	-0 (1800)	Capacity of link, veh/hr
	36-40	F5.0	VEL(L)	mph	1 to 147	58	Speed
	41-45	I5	LCON(L,1)	--	0 to 240	3	Link to link connections. The link that L connects to going straight.
	46-50	I5	LCON(L,2)	--	0 to 240	144	The link L connects to going right
	51-55	I5	LCON(L,3)	--	0 to 240	141	The link that L connects to going left
	56-60	F5.0	HEIGHT(L)	m	≥0	0	Emission height
	61-70	F10.5	SCALYX	m/map unit	>0	.30478(1)	Converts the x and y coordinates of the link end points from map units to meters
	71-75	F5.1	XAD	Kilometers	0-99999	0	Value will be multiplied by 1000 and added to x coordinate following application of scale factor
	76-80	F5.1	YAD	Kilometers	0-99999	0	Value to be multiplied by 1000 and added to y coordinate following application of scale factor

Table 1 (Continued)

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
3	1-2	I2	IC	--	3	3	Card type number
	3-5	I3	I	--	0 to 70	1	Intersection number
	6-10	I5	LIN(I,J)	--	0 to 240	142	North link number
	11-15	I5	LIN(I,J)	--	0 to 240	4	East link number
	16-20	I5	LIN(I,J)	--	0 to 240	143	South link number
	21-25	I5	LIN(I,J)	--	0 to 240	1	West link number
	26-30	I5	ITYPC(I)	--	-2 to 5	2	Type control; -1 = 2 way stop; -2 = 4 way stop; 0 = no control; 2,3 = V/A control; 1 = fixed time control; 4 = type 2 N-S, type 3 E-W; 5 = type 3 N-S, type 2 E-W
							Type 1 Fixed Phases / Type 2 Actuated Phases / Type 3 Actuated Phases
	31-35	I5	CYCL(I)	sec	≥Σ PH(I,J)	200	Cycle / Max cycle / Max cycle
	36-39	F4.0	PH(I,J)	sec	≥0	10	N-S / Min N-S / Min N
	40-43	F4.0	PH(I,J)	sec	≥0	10	E-W / Min E-W / Min E
	44-47	F4.0	PH(I,J)	sec	≥0	0	N-S LT / Min N-S LT / Min S
	48-51	F4.0	PH(I,J)	sec	≥0	0	E-W LT / Min E-W LT / Min W
	52-55	F4.0	CI(I)	sec	≥0	3	Yellow time interval
	56-60	F5.0	GCAP(I,1)	veh/hr	≥0	3600 (1200 veh/hr/lane)	Capacity of one approach N (or S) for phase 1 per hr green
	61-64	F5.0	GCAP(I,2)	veh/hr	≥0	4000 (1200 veh/hr/lane)	Capacity of E (or W) phase 2 per hr green
	65-69	F5.0	GCAP(I,3)	veh/hr	≥0	0 (1200 veh/hr/lane)	Capacity of S or S-N phase 3 per hr green
	70-74	F5.0	GCAP(I,4)	veh/hr	≥0	0 (1200 veh/hr/lane)	Capacity of W or W-E phase 4 per hr green

Table 1 (Continued)

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
4	1-2	I2	IC	--	-4	4	Card type number
	3-4	A2	IEXT	--	AA-9Z	5N	Zone identification (interior zones begin with a A,B...Z,1...4; exterior with 5-9)
	5-6	F2.0	VEHTYP(1,Z)	--	0 to 99	--	Percent of vehicles of type 1
	7-8	F2.0	VEHTYP(2,Z)	--	0 to 99	--	Percent of vehicles of type 2
	9-10	F2.0	VEHTYP(3,Z)	--	0 to 99	--	Percent of vehicles of type 3
	11-12	F2.0	VEHTYP(4,Z)	--	0 to 99	--	Percent of vehicles of type 4
	13-14	F2.0	VEHTYP(5,Z)	--	0 to 99	--	Percent of vehicles of type 5
	15-16	F2.0	VEHTYP(6,Z)	--	0 to 99	--	Percent of vehicles of type 6
	17-18	F2.0	VTYPM(1,Z)	--	0 to 99	--	Percent of military vehicles of type 1
	19-20	F2.0	VTYPM(2,Z)	--	0 to 99	--	Percent of military vehicles of type 2
	21-22	F2.0	VTYPM(3,Z)	--	0 to 99	--	Percent of military vehicles of type 3
	23-24	F2.0	VTYPM(4,Z)	--	0 to 99	--	Percent of military vehicles of type 4
	25-26	F2.0	VTYPM(5,Z)	--	0 to 99	--	Percent of military vehicles of type 5
	27-28	F2.0	VTYPM(6,Z)	--	0 to 99	--	Percent of military vehicles of type 6
	29-30	F2.0	VTYPM(7,Z)	--	--	--	Number of buses (veh-type 7)
	31-32	I2	PNOS(Z)	--	1 to 12	1	Number of sides (links) which define zone area (the first PNOS bordering links define the zone area)
	33-36	I4	ZLINKS(1,Z)	--	0 to 240	112	Bordering link number 1 (a negative link number indicates no access to the zone from this link)
	37-40	I4	ZLINKS(2,Z)	--	0 to 240	111	Bordering link number 2
	.	.					.
	.	.					.
	.	.					.
	77-80	I4	ZLINKS(12,Z)	--	0 to 240	0	Bordering link number 2

Table 1 (Continued)
BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
5	1-2	A2		--	4	4	Card type number
	3-4	A2	IBL	--	Zone name	15	Zone name that demographic variables apply to
	5	I1	LANDU(Z)	--	1 to 7	1	Land use of zone
	6-9	F4.0	PLC	veh	0	--	Parking lot capacity for interior zones/access time to adjacent link for exterior zones
	10-13	F4.0	PVEH	veh	--	--	Parked vehicles initially in parking zone. Alternate access time to adjacent link for exterior zone.
	14-20	F7.0	VAR(1,Z)	--	0 to 999999.	--	Value of 1st demographic variable for this zone
	21-27	F7.0	VAR(2,Z)	--	0 to 999999.	--	Value of 2nd demographic variable for this zone
	28-34	F7.0	VAR(3,Z)	--	0 to 999999.	--	Value of 3rd demographic variable for this zone
	35-41	F7.0	VAR(4,Z)	--	0 to 999999.	--	Value of 4th demographic variable for this zone
	42-48	F7.0	VAR(5,Z)	--	0 to 999999.	--	Value of 5th demographic variable for this zone
	49-55	F7.0	VAR(6,Z)	--	0 to 999999.	--	Value of 6th demographic variable for this zone
	56-62	F7.0	VAR(7,Z)	--	0 to 999999.	--	Value of 7th demographic variable for this zone
	63-69	F7.0	VAR(8,Z)	--	0 to 999999.	--	Value of 8th demographic variable for this zone
	70-73	F4.0	VAR(9,Z)	--	0 to 999999.	--	Value of 9th demographic variable for this zone
	74-80	F7.0	VAR(10,Z)	--	0 to 999999.	--	Value of 10th demographic variable for this zone

Table 1 (Continued)

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
6	1-2	I2	IC	--	6	6	Card type number
	3-12	A10	PURP(K)	--		HOME-WORK	Trip purpose
	13-14	F2.2	FCSP(K,1)	--	00 to 99	20	Fraction of cold starts when traveling for purpose K from external zones
	15-16	F2.2	FCSP(K,2)	--	00 to 99	20	Fraction of cold starts when traveling for purpose K from interior zones
	17	I1	LANDO(1,K)	--	0 to 7	0	Land use associated with this trip purpose
	18-19	I2	NVARO(1,K)	--	0 to 10	1	Index of 1st variable in productions or attractions equation
	20-25	F6.4	COEFO(1,K)	--	.00001 to 99999.	.051	Coefficient for productions
	26-31	F6.4	COEFD(1,K)	--	.00001 to 99999.	.1023	Coefficient for attractions
	32	I1	LANDO(2,K)	--	0 to 7	0	Land use associated with this trip purpose or land use associated with this demographic variable
	33-34	I2	NVARO(2,K)	--	0 to 10	2	Index of 2nd variable in productions or attractions equation
	35-40	F6.4	COEFO(2,K)	--	.00001 to 99999.	.049	Coefficient for productions
	41-46	F6.4	COEFD(2,K)	--	.00001 to 99999.	.1211	Coefficient for attractions
	47	I1	LANDO(3,K)	--	0 to 7	0	Land use associated with this trip purpose or with this demographic variable
	48-49	I2	NVARO(3,K)	--	0 to 10	3	Index of 3rd variable in productions or attractions equation
	50-55	F6.4	COEFO(3,K)	--	.00001 to 99999.	.1301	Coefficient for productions
	56-61	F6.4	COEFD(3,K)	--	.00001 to 99999.	.0401	Coefficient for attractions
	62	I1	LANDO(4,K)	--	0 to 7	0	Land use associated with this trip purpose or with the following indexed demographic variable
	63-64	I2	NVARO(4,K)	--	0 to 10	4	Index of 4th variable in prodductions or attractions equation
	65-70	F6.4	COEFO(4,K)	--	.00001 to 99999.	.1001	Coefficient for productions
	71-76	F6.4	COEFD(4,K)	--	.00001 to 99999.	.0521	Coefficient for attractions

Table 1 (Continued)

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value limits	Typical Value (default value in parentheses)	Description
7	1-2	I2	IC	--	7	7	Card type number
	3-5	I3	IG	--	1 to 10	1	Gate number
	6-10	I5	LGATE(1,IG)	--	1 to 240	15	Link number of exit gate to base
	11-15	I5	LGATE(2,IG)	--	1 to 240	16	Link number of entrance gate to base
	16-20	F5.0	GCOUNT(1,IG)	--	-1 to 99999	50	Exit gate count during time period; -1 means it is a new gate
	21-25	F5.0	GCOUNT(2,IG)	--	-1 to 99999	600	Entrance gate count during time period; -1 means it is a new gate
	26-30	F5.0	GCNT15(IG,1,1)	--	0 to 99999	5	Exit gate count 1st 15 minutes
	31-35	F5.0	GCNT15(IG,1,2)	--	0 to 99999	20	Exit gate count 2nd 15 minutes
	36-40	F5.0	GCNT15(IG,1,3)	--	0 to 99999	18	Exit gate count 3rd 15 minutes
	41-45	F5.0	GCNT15(IG,1,4)	--	0 to 99999	7	Exit gate count 4th 15 minutes
	46-50	F5.0	GCNT15(IG,2,1)	--	0 to 99999	200	Entrance gate count 1st 15 minutes
	51-55	F5.0	GCNT15(IG,2,2)	--	0 to 99999	210	Entrance gate count 2nd 15 minutes
	56-60	F5.0	GCNT15(IG,2,3)	--	0 to 99999	90	Entrance gate count 3rd 15 minutes
	61-65	F5.0	GCNT15(IG,2,4)	--	0 to 99999	100	Entrance gate count 4th 15 minutes
8	1-2	I2	IC	--	8	8	Card type number
	3-5	I3	L	--	1 to 240	151	Link number on which count occurs ($1 \le L \le NLINK$)
	6-10	F5.0	COUNT(1,L)	veh	≥0.	775.	Count going straight from link L through the intersection during time period
	11-15	F5.0	COUNT(2,L)	veh	≥0.	88.	Count going right from link L
	16-20	F5.0	COUNT(3,L)	veh	≥0.	107.	Count going left from link L
	21-25	I5	L2	--	1 to 240	152	Link number on which count occurs
	26-30	F5.0	COUNT(1,L2)	veh	≥0.	1064.	Count going straight from link L2
	31-35	F5.0	COUNT(2,L2)	veh	≥0.	0.	Count going right from link L2
	36-40	F5.0	COUNT(3,L2)	veh	≥0.	0.	Count going left from link L2
	41-45	I5	L3	--	1 to 240	153	Link number on which count occurs
	46-50	F5.0	COUNT(1,L3)	veh	≥0.	457.	Count going straight from link L3
	51-55	F5.0	COUNT(2,L3)	veh	≥0.	147.	Count going right from link L3
	56-60	F5.0	COUNT(3,L3)	veh	≥0.	170.	Count going left from link L3
	61-65	I5	L4	--	1 to 240	154	Link number on which count occurs
	66-70	F5.0	COUNT(1,L4)	veh	≥0.	429.	Count going straight from link L4
	71-75	F5.0	COUNT(2,L4)	veh	≥0.	0.	Count going right from link L4
	76-80	F5.0	COUNT(3,L4)	veh	≥0.	0.	Count going left from link L4

Table 1 (Continued)

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
9	1-2	I2	IC	--	9	9	Card type number
	3-7	F5.2	VLF(1)	persons/veh	1 to 999	1.2	Load factor for vehicle type 1
	8-12	F5.2	VLF(2)	persons/veh	1 to 999	1.2	Load factor for vehicle type 2
	13-17	F5.2	VLF(3)	persons/veh	1 to 999	1.2	Load factor for vehicle type 3
	18-22	F5.2	VLF(4)	persons/veh	1 to 999	1.0	Load factor for vehicle type 4
	23-27	F5.2	VLF(5)	persons/veh	1 to 999	1.0	Load factor for vehicle type 5
	28-32	F5.2	VLF(6)	persons/veh	1 to 999	1.0	Load factor for vehicle type 6
	33-37	F5.2	VLFM(1)	persons/veh	1 to 999	1.3	Load factor for military vehicle type 1
	38-42	F5.2	VLFM(2)	persons/veh	1 to 999	1.1	Load factor for military vehicle type 2
	43-47	F5.2	VLFM(3)	persons/veh	1 to 999	1.1	Load factor for military vehicle type 3
	48-52	F5.2	VLFM(4)	persons/veh	1 to 999	1.0	Load factor for military vehicle type 4
	53-57	F5.2	VLFM(5)	persons/veh	1 to 999	1.0	Load factor for military vehicle type 5
	58-62	F5.2	VLFM(6)	persons/veh	1 to 999	1.0	Load factor for military vehicle type 6
	63-67	F5.2	VLFM(7)	persons/veh	1 to 999	30.0	Load factor for military vehicle type 7
10	1-2	I2	IC	--	10	10	Card type number
	3-4	I2	IGT	--	1 to 10	1	Origin or destination gate
	5-6	I1	ITYP2	--	1 to 6	4	First type vehicle affected
	7	I1	ITYP1	--	1 to 6	5	Through last type vehicle affected
	8-10	I3	ITR(IT,1)	--	1 to 240	220	Last link in route from zone to IGT or IGT to zone
	11-13	I3	ITR(IT,2)	--	1 to 240	218	2nd to last link in route from zone to IGT or IGT to zone
	.	.	.	.	.		.
	.	.	.	.	.		.
	.	.	.	.	.		.
	77-79	I3	ITR(IT,24)	--	1 to 240	0	First link in route from zone to IGT or IGT to zone

Table 1 (Continued)

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
11	1-2	I2	IC	--	11	11	Card type number
	3	I1	I	--	1 to 2	1	Productions/attractions flag
	4-7	A4	AT	--	--	0601	Time of day and card sequence
	8-11	F4.0	SHFPCT(1,I,K)	persons	0 to 9999	20	Shift productions/attractions (I = 1/2) to zone 1 (AT = ---1), 19(AT = ---2), 37(AT = ---3), (K = 1,4)
	12-15	F4.0	SHFPCT(2,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 2, 20, or 38 in time period K
		F4.0	SHFPCT(3,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 3, 21, or 39 in time period K
		F4.0	SHFPCT(4,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 4, 22, or 40 in time period K
		F4.0	SHFPCT(5,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 5, 23, or 41 in time period K
		F4.0	SHFPCT(6,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 6, 24, or 42 in time period K
		F4.0	SHFPCT(7,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 7, 25, or 43 in time period K
		F4.0	SHFPCT(8,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 8, 26, or 44 in time period K
		F4.0	SHFPCT(9,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 9, 27, or 45 in time period K
		F4.0	SHFPCT(10,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 10, 28, or 46 in time period K
		F4.0	SHFPCT(11,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 11, 29, or 47 in time period K
		F4.0	SHFPCT(12,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 12, 30, or 48 in time period K
		F4.0	SHFPCT(13,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 13, 31, or 49 in time period K
		F4.0	SHFPCT(14,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 14, 32, or 50 in time period K
		F4.0	SHFPCT(15,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 15 or 33 in time period K
		F4.0	SHFPCT(16,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 16 or 34 in time period K
		F4.0	SHFPCT(17,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 17 or 35 in time period K
		F4.0	SHFPCT(18,I,K)	persons	0 to 9999	81	Shift productions/attractions to zone 18 or 36 in time period K

Table 1 (Continued)

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
12	1-2	I2	IC	--	12	12	Card type number
	3-7	F5.0	XW	m	0 to 99999	0	The lower left X coordinate if entire map is not to be plotted
	8-12	F5.0	YW	m	0 to 99999	0	The lower left Y coordinate if entire map is not to be plotted
	13-18	F6.0	SFAC	ft	1 to 99999	400	The scale of the map, 1 inch x feet
	19-23	F5.0	DI	in.	.00001 to 1	.1	The distance between traffic volume lines
	24-28	F5.0	H1	in.	.00001 to 1	.1	The length of tick marks used to mark critical flows
	29-33	F5.0	DH1	in.	.00001 to 1	.1	The distance between critical flow tick marks
	34-38	F5.0	CH1	in.	.00001 to 1	.3	The height of letters used for traffic volumes
	39-43	I5	NLIN	--	0 to 99	6	Number of lines used to indicate volumes
	44-48	I5	LPLTF	--	0 to 2	1	Flag to print link-zone plot (=1), no zone number (=2)
	49-53	F5.0	XMX	m	0 to 99999	0	The upper right X coordinate of a window to be plotted
	54-57	F5.0	YMX	m	0 to 99999	0	The upper right Y coordinate of a window to be plotted
13		I2	IC	--	--		Card type number
		F4.3	FEXGEN(1)	--	.1 to 2.	1.0	Calibration factor for hour or 1st 15 minute period
		F4.3	FEXGEN(2)	--	.1 to 2.	1.0	Calibration factor for hour or 2nd 15 minute period
		F4.3	FEXGEN(3)	--	.1 to 2.	1.0	Calibration factor for hour or 3rd 15 minute period
		F4.3	FEXGEN(4)	--	.1 to 2.	1.0	Calibration factor for hour or 4th 15 minute period
		F4.3	FEXATT(1)	--	.1 to 2.	1.0	Calibration factor for hour or 1st 15 minute period
		F4.3	FEXATT(2)	--	.1 to 2.	1.0	Calibration factor for hour or 2nd 15 minute period
		F4.3	FEXATT(3)	--	.1 to 2.	1.0	Calibration factor for hour or 3rd 15 minute period
		F4.3	FEXATT(4)	--	.1 to 2.	1.0	Calibration factor for hour or 4th 15 minute period
		F4.3	FINGEN(1)	--	.1 to 2.	1.0	Calibration factor for hour or 1st 15 minute period
		F4.3	FINGEN(2)	--	.1 to 2.	1.0	Calibration factor for hour or 2nd 15 minute period
		F4.3	FINGEN(3)	--	.1 to 2.	1.0	Calibration factor for hour or 3rd 15 minute period
		F4.3	FINGEN(4)	--	.1 to 2.	1.0	Calibration factor for hour or 4th 15 minute period
		F4.3	FINATT(1)	--	.1 to 2.	1.0	Calibration factor for hour or 1st 15 minute period
		F4.3	FINATT(2)	--	.1 to 2.	1.0	Calibration factor for hour or 2nd 15 minute period
		F4.3	FINATT(3)	--	.1 to 2.	1.0	Calibration factor for hour or 3rd 15 minute period
		F4.3	FINATT(4)	--	.1 to 2.	1.0	Calibration factor for hour or 4th 15 minute period

Table 1 (Concluded)

BATS BASIC INPUT INFORMATION CARDS 0 THROUGH 16
(Data Read In by Subroutine INPT)

Card	Column	Format	Symbol	Units	Value Limits	Typical Value (default value in parentheses)	Description
14	1-2	I2	IC	--	14	14.	PLUALU array values
		F6.0	PLUALU(1,1)	--	0 to 99999	587.	Trips to land use 1
		F6.0	PLUALU(1,2)	--	0 to 99999	0.	Trips to land use 2
		F6.0	PLUALU(1,3)	--	0 to 99999	418.	Trips to land use 3
		F6.0	PLUALU(1,4)	--	0 to 99999	324.	Trips to land use 4
		F6.0	PLUALU(1,5)	--	0 to 99999	415.	Trips to land use 5
		F6.0	PLUALU(1,6)	--	0 to 99999	0.	Trips to land use 6
		F6.0	PLUALU(1,7)	--	0 to 99999	171.	Trips to land use 7
15	1-2	I2	IC	--	15	15	Card type number
	3-10	A8	DVNAME(IDV)	Alpha	--	MIL EMPL	Demographic variable #1 name or units
	11-18	A8	DVNAME(2)	Alpha	--	CIV EMPL	Demographic variable #2 name or units
	19-26	A8	DVNAME(3)	Alpha	--	HOUSES	Demographic variable #3 name or units
	27-34	A8	DVNAME(4)	Alpha	--	DORM UNT	Demographic variable #4 name or units
	35-42	A8	DVNAME(5)	Alpha	--	SHOP EMPL	Demographic variable #5 name or units
	43-50	A8	DVNAME(6)	Alpha	--	REC EMPL	Demographic variable #6 name or units
	51-58	A8	DVNAME(7)	Alpha	--	HOSP EMPL	Demographic variable #7 name or units
	59-66	A8	DVNAME(8)	Alpha	--	FOOD SRV	Demographic variable #8 name or units
	67-74	A8	DVNAME(9)	Alpha	--	MIL VEH	Demographic variable #9 name or units
	75-80	A6	DVNAME(10)	Alpha	--	MIL VMT	Demographic variable #10 name or units
16	any	NAMELIST	VHMLO(I)	--	--	(.08333)	Fraction of military vehicle mileage historically generated in the i^{th} month
			VHMLDY(I)	--	--	(.1429)	Fraction of weekly military vehicle miles occurring daily during the midweek [i = 1], on the weekend [i = 2]
			VHMLHR(I)	--	--	(.08333)	Fraction of daily military vehicle miles occurring during the i^{th} hour of the day
			CVABMO(I)	--	--	(.08333)	Fraction of civilian vehicle mileage historically generated in the i^{th} month
			CVABDY(I)	--	--	(.1429)	Fraction of civilian vehicle mileage historically generated each day during the midweek [i = 1], or each day on the weekend [i = 2]
			CVABHR(I)	--	--	(.08333)	Fraction of civilian vehicle mileage historically generated in the i^{th} hour of the day

$(X_1,Y_1;\ X_2,Y_2)$, $(X_1,Y_1;\ X_1,0)$, $(X_2,Y_2;\ X_2,0)$, and $(X_1,0;\ X_2,0)$ as the four sides is:

$$(Y_1 + Y_2)(X_1 - X_2)/2 \quad .$$

(3) The area of the zone is then:

$$A = \Big((Y_1 + Y_2)(X_1 - X_2) + (Y_2 + Y_3)(X_2 - X_3) + \ldots (Y_{n-1} + Y_n)(X_{n-1} - X_n)$$
$$+ (Y_n + Y_1)(X_n - X_1)\Big)/2$$

Note the X_1,Y_1, X_2,Y_2, X_3,Y_3, ... X_n,Y_n must be sequential points that define the perimeter of the zone.

3.3.2 Data Description

Symbol	Meaning
X1(L),Y1(L),X2(L),Y2(L)	The x,y coordinates of link L
PNOS(Z)	The number of links defining zone Z.
ZLINKS(I,Z)	The link numbers (I=1,12) defining the area Z.
PX(NL),PY(NL)	The coordinates of the NLth point defining a zone.
NPT	The number of points defining a zone.
TRIARE(NL)	The area of the NLth trapezoid.

3.3.3 Reports

When the x,y coordinates of a link do not indicate connection to the previous link, the error message, "ZONE Z is disconnected between links L and L1," is printed out. The area of this zone will be incorrectly computed based on the sides that were connected.

B.1. ZONE PARKING CAPACITIES AND TRIP LENGTHS is a table of the results of ZAREA.

3.4 MNPATH

3.4.1 Purpose

This subroutine is responsible for generating the minimum path between each origin and destination zone in the network. The method generates the minimum path from one origin AA to all links of the network.

(Recall that a link is one direction of flow on a street and has a load point halfway between each end.) Two arrays are initialized before calling MNPATH. The TT(L,J) array represents the travel time from link L to a connected link J. The C(L) array represents the cost of travel from the origin zone to any link L of the network. The C(L) array is initialized to zero for any link connected to the origin zone and to infinity for any unconnected link.

The algorithm described below is carried out using these two arrays. On completion, the C(L) array represents the minimum travel time (or cost) from the origin zone to each link L of the network. During this process, the R(L) array is generated, which contains the link number that immediately precedes link L in the route from the origin to L.

A Minimum Path Algorithm for Route Generation:

Step 1--Initialize TT(L,J) with the constant cost in traveling from link L to three possible adjacent links, $J = J_1, J_2, J_3$.

Step 2--For an origin zone initialize with a large number the cost, C(L), to travel from the origin to each link in the network ($C(L) \simeq \infty$ for all L).

Step 3--For the links adjacent to the origin zone store a travel time cost in C(L) ($L = L_1, L_2, \ldots, L_{12}$).

Step 4--Set the travel time costs of Step 3 negative, to flag that all links connected to these may have an improved travel time cost.

Step 5--Find a negative C(L) and the connected links J_1, J_2, J_3 to link L. If no negative C(L) exists then do Step 9. If no connected links exist then do Step 8.

Step 6--For each $J = J_1, J_2, J_3$ test $|C(L)| + TT(L,J) < |C(J)|$. If the relationship does not hold true then do Step 7. Otherwise replace C(J) by $|C(L)| + TT(L,J)$ and set C(J) negative. The route is saved by storing the previous link to J (i.e., R(J) = L).

Step 7--Repeat from Step 6 until all J's have been tested.

Step 8--Set C(L) to $|C(L)|$ and repeat from Step 5.

Step 9--The C(L) array is the cost of travel from the origin to each link L. Repetition from Step 2 will generate new costs of travel from other origins.

3.4.2 Data Description

Symbol	Meaning
C(L)	Cost of time going from origin zone to link L
R(L)	Link previous to link L in route from origin zone to link L
TT(L,J)	Travel time going from link L straight (J=1), right (J=2), or left (J=3)
LINKS(I)	The links accessing the zone (or gate) of origin
NL	The number of links accessing the zone (or gate) of origin
C1	The cost to get from the center of the origin zone to LINKS(1)
C2	The cost to get from the center of the origin zone to LINKS(2), LINKS(3), etc.

3.5 TRIPGEN

3.5.1 Purpose

The trip generation routine generates trip-end productions and attractions as linear functions of up to 10 demographic variables for up to 15 trip purposes. The coefficients used to predict linear productions and attractions are specified by the user, or they may be generated by default using a resident array of trips related to land use.

3.5.2 Data Description

Symbol	Meaning
Initial (COMMON/TRIP/)	
VAR(J,Z)	The Jth demographic variable associated with zone Z.
COEFO(I,K)	The Ith coefficient for generating productions for trip purpose K.
COEFD(I,K)	The Ith coefficient for generating attractions for trip purpose K.
NVARO(I,K)	The demographic variable index associating the Ith production coefficient with a demographic variable.
NVARD(I,K)	The demographic variable index associating the Ith attraction coefficient with a demographic variable.
LANDO(I,K)	The land uses associated with trip purpose K.

Initial (COMMON/TRIP/) (continued)

PLUALU(L,LU,I)	The number of trips from land use L zones to land use LU zones in the a.m. off-peak, noon rush, or p.m. off-peak hours (I=1,2, or 3, respectively).
NTRIP	The number of trip purposes.
NTRIPC	The number of trip purposes using civilian vehicles.
LANDU(Z)	The land use designated for zone Z.
FCSP(K,1)	Fraction of cold start vehicles with external origins for purpose K.
FCSP(K,2)	Fraction of cold start vehicles with internal origins for purpose K.

Intermediate

ALUA(L,LU)	The number of trips going from land use L zones to land use LU zones in the time period being simulated.
CSPLU(LU)	The column sum (attractions) of the PLUALU array for zones with land use LU.
RSPLU(LU)	The row sum (productions) of the PLUALU array for zones with land use LU.
CSUM(LU)	The column sum (attractions) of ALUA array for zones with land use LU.
RSUM(LU)	The row sum (productions) of the ALUA array for zones with land use LU.
VARZDV	The weighted average of all demographic variables associated with a zone.
SFTO	Sum of the flex time trips from all origins.
SFTD	Sum of the flex time trips to all destinations.
TSHO	Total shift trips from all origins.
TSHD	Total shift trips to all destinations.
TGATEC	Total gate count for four 15-minute periods.
GAFRO	Fraction of trips arriving in 15 minutes from all origins.
GAFRD	Fraction of trips arriving in 15 minutes to all destinations.
MATRIX(G,Z)	Matrix associating gate G with zone Z (1 = associated; 0 = not associated).
FRAC	Fraction of all flex pool trips to be routed to a zone.

Intermediate (Continued)

SHFPCT(Z,1,T)	Shift employee origins from zone Z, time period T.
SHFPCT(Z,2,T)	Shift employee destinations to zone Z, time period T.

Resultant

NTO(Z,K)	The number of person trips originating at zone Z for trip purpose K.
NTD(Z,K)	The number of person trips destined for zone Z for trip purpose K.
FCS(Z)	Fraction of cold starts for zone Z.

3.5.3 Reports

C.1. ARRAY OF LAND USE PRODUCTIONS AND ATTRACTIONS. This is the ALUA array for the current time period.

C.2. TRIP PRODUCTIONS (PERSONS). This is the NTO array.

C.3. TRIP ATTRACTIONS (PERSONS). This is the NTD array.

C.4. MATRIX ASSOCIATING ZONES WITH GATES. This is the MATRIX array.

C.5. TRIP PRODUCTIONS MODIFIED BY GATE COUNTS AND SHIFT COUNTS (PERSONS). This is the NTO array for a 15-minute time period.

C.6. TRIP ATTRACTIONS MODIFIED BY GATE COUNTS AND SHIFT COUNTS (PERSONS). This is the NTD array for a 15-minute time period.

3.5.4 Subroutines Called

The following subroutines are called: GRAVO, GATFUN.

3.6 GRAVO

3.6.1 Purpose

The GRAVO subroutine distributes the person trips associated with each zone into person trips associated with each pair of zones and a gate. A gravity model is used to distribute trips among zone pairs based on zone-gate and gate-zone impedances (usually travel time) and zonal mass (number of trip ends). The general form of the model is as follows where Z is an external zone and Z1 is an interal zone:

$$OV(Z,G) = VD(Z1,G) + GCNT15(G,2,I)/(CGO(G) + CGD(G)**3) *NTO(Z,K)*NTD(Z1,K)/ \sum_{\text{all } Z1} NTD(Z1,K)$$

The equation makes the number of persons going from zone Z to zone Z1 through gate G proportional to the gate count at gate G and the number of person trips being made between zone Z and Z1 indirectly proportional to the travel time to the gate, plus the cube of the travel time within the base.

3.6.2 Data Description

Symbol	Meaning
Initial	
NTO(Z,K)	The number of person trips originating at zone Z for trip purpose K
NTD(Z,K)	The number of person trips destinated to zone Z for trip purpose K
GCNT15(G,1,I)	The number of vehicles exiting through gate G during time period I
GCNT15(G,2,I)	The number of vehicles entering through gate G during time period I
CG(G,L)	The cost to travel from gate G to link L (also assumed to be the cost of travel from link L to gate G)
Intermediate	
SGCO1	The sum of the existing gate counts for this time period
SGCO2	The sum of the entering gate counts for this time period
TOSUM(K)	The total trips originating on base for purpose K
TDSUM(K)	The total trips destined on base for purpose K
ZGT	The trips originating at an internal zone Z for all trip purposes
ZAT	The trips destined for an internal zone Z for all trip purposes
Resultant	
OV(Z,G)	The number of person trips going from zone Z to gate G.
VD(Z,G)	The number of person trips going to zone Z from gate G.

Resultant (Continued)

NTO(Z,K)	The number of person trips going from internal zone Z to another internal zone for purpose K.
NTD(Z,K)	The number of person trips going to internal zone Z from another internal zone for purpose K.

3.6.3 Reports

D.1. ORIGIN TO GATE AND GATE TO DESTINATION TRIPS

D.2. ORIGIN-DESTINATION ARRAY

D.3. ORIGIN-DESTINATION ARRAY FOR CIVILIAN VEHICLE TRIPS

D.4. ORIGIN-DESTINATION ARRAY FOR MILITARY VEHICLE TRIPS

3.7 MODAL

3.7.1 Purpose

This subroutine determines the mode of travel of all person trips going between all origin and destination zones. The OV(IZ,IG) and VD(IZ1,IG) arrays store the number of persons originating at zone IZ and going through gate IG, and the number of persons going through IG and destined for zone IZ1. All these person trips must be assigned to some mode of travel, which is one of six types of civilian vehicles and seven types of military vehicles. The percentage and the load factor for each type of vehicle for each zone are known. Thus, the number of vehicle trips between IZ and IG and between IG and IZ1 is typically easy to calculate.

The exception is military vehicle type 7--a bus. A bus may not have a load factor, in which case it must be computed in the MODAL subroutine.

3.7.2 Data Description

Symbol	Meaning
OV(Z,G)	Origin zone Z to gate G, demand volume in persons.
VD(Z,G)	Gate G to destination zone Z, demand volume in persons.
VEHTYP(I,Z)	Percent of civilian vehicles of each type I, at each zone Z.
VTYPM(I,Z)	Percent of military vehicles of each type I, at each zone Z. For VTYPM(7,Z) this is the actual number of buses.

FRAMIL(Z,I)	Fraction of person trips that use military vehicles for each zone Z; FRAMIL(Z,1) is the fraction that originates at a zone Z, and FRAMIL(Z,2) is the fraction destined for a zone Z.
VLF(I)	Load factor in persons/vehicle for civilian vehicles of type I.
VLFM(I)	Load factor in persons/vehicle for military vehicles of type I.
OV(Z,NG1)	Internal origin zone Z productions of internal trips.
VD(Z,NG1)	Internal origin zone Z attractions of internal trips.
TP	Length of time of simulation.
VZ(Z)	Number of parking trips to each zone Z.
ZV(Z)	Number of parked vehicles leaving each zone Z.
NEXT	Number of exterior zones.
NZONES	Number of interior and exterior zones.
NGATE	Number of gates IG.

3.7.3 Reports

E.1. MODAL SPLIT VEHICLE LOAD FACTORS

E.2. ORIGIN TO GATE AND GATE TO DESTINATION TRIPS

3.8 SMOOTH

3.8.1 Purpose

The gate counts can be used to calibrate the vehicle trips predicted between zones. The external-to-internal and internal-to-external trips should equal the gate counts. Thus, the sum of external trip productions can be made to equal the sum of the vehicles coming through all the gates, and the internal to external trip productions can be made to equal the sum of the outgoing gate counts. Another calibration function is performed to route vehicles through the appropriate gates. So far the model has weighted the trips predicted through each gate by the gate counts. A matrix multiplication is undertaken first to make the columns of the OV(Z,G) and VD(Z,G) arrays add up to the gate counts and second to make the rows of the OV and VD arrays add up to zone productions and attractions.

3.8.2 Data Description

Symbol	Meaning
OV(Z,G)	Number of vehicle trips going from zone Z to gate G.

VD(Z,G)	Number of vehicle trips going to zone Z from gate G.
GCSUM1	Sum of gate counts entering the base.
OVSUM1	Predicted count of entering vehicles.
FEXGEN	The factor for converting GCSUM1 to OVSUM1.
FEXATT	The factor for converting predicted exiting vehicles to exiting gate counts.
FINGEN	The factor for converting predicted exiting vehicles to gate counts.
FINATT	The factor for converting predicted entering vehicles to gate counts.
ZGENR(Z)	The total generations from zone Z that go through a gate.
ZATTR(Z)	The total attractions from zone Z that go through a gate.
SOVIZ	Sum of the OV array for all zones and one gate.
SVDIZ	Sum of the VD array for all zones and one gate.
SOVIG	Sum of the OV array for one zone and all gates.
SVDIG	Sum of the VD array for one zone and all gates.
ZV(Z)	The number of vehicles that park in zone Z.
VZ(Z)	The number of vehicles that leave from parking places in zone Z.
PLA(Z)	The parking area of a zone.
PD	The parking density of a zone.
PV(Z)	The number of parked vehicles in a zone.

3.8.3 Reports

F.1. CALIBRATION FACTORS

F.2. ORIGIN TO GATE AND GATE TO DESTINATION TRIPS.

3.9 ASSIGN

3.9.1 Purpose

This subroutine assigns vehicle trips as stored in the NTO, NTD, OV, and VD arrays to the links of the network, and maintains vehicle counts on each link for each through, right, left, and terminating movement, and for civilian types 1-6, military types 1-6, hot start, and cold start vehicles. The subroutine depends on the MNPATH subroutine to return the minimum time path between zones. Two paths between each gate-zone pair or internal zone-internal zone pair are found. Trips are allocated to the alternate routes based on travel time. Vehicle type data are maintained, as are hot/cold start data.

3.9.2 Data Description

Symbol	Meaning
Initial	
OV(Z,G)	Vehicles going from zone Z to gate G
VD(Z,G)	Vehicles going from gate G to zone Z
NTO(Z,K)	Vehicles going from zone Z to internal zones
NTD(Z,K)	Vehicles going to zone Z from internal zones
RG(G,L)	Route from gate G to each link L
CG(G,L)	Cost from gate G to each link L
LCON(L,J)	Link connecting to L going J direction
ZLINKS(I,Z)	Links bordering zone Z, (I=1 to 12)
Intermediate	
ZVEH(I)	Civilians vehicles type I--used by SUMIT
ZVEHM(I)	Military vehicles of type I--used by SUMIT
DIV	Divisor applied to trips in SUMIT
ZTRIP	Trips from zone Z
ZTRIP1	Trips to zone Z1
OD	Trips going from zone Z to zone Z1
Resultant	
COUNT(1,L)	Vehicle count going through on link L
COUNT(2,L)	Vehicle count going right on link L
COUNT(3,L)	Vehicle count going left on link L
COUNT(4,L)	Vehicle count terminating on link L
COUNT(5,L)	Civilian vehicles of type 1
COUNT(6,L)	Civilian vehicles of type 2
COUNT(7,L)	Civilian vehicles of type 3
COUNT(8,L)	Civilian vehicles of type 4
COUNT(9,L)	Civilian vehicles of type 5
COUNT(10,L)	Civilian vehicles of type 6
COUNT(11,L)	Military vehicles of type 1
COUNT(12,L)	Military vehicles of type 2
COUNT(13,L)	Military vehicles of type 3
COUNT(14,L)	Military vehicles of type 4
COUNT(15,L)	Military vehicles of type 5

Resultant (Continued)

COUNT(16,L)	Military vehicles of type 6
COUNT(17,L)	Number of cold start vehicles
COUNT(18,L)	Number of hot start vehicles

3.9.3 Reports

G.1. ASSIGNMENT COUNTS AND ASSOCIATED COMPUTER RUN TIME

G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STARTS

3.9.4 Subroutines Called

The following subroutines are called: MNPATH, SUMIT.

3.10 INSEC

3.10.1 Purpose

This subroutine computes delays and queue lengths at signalized intersections within the simulated network. Three types of signal controllers can be specified. The first type is a fixed-time controller in which the north-south, east-west, and left-turning phases are all of fixed time length. The other types of controllers are vehicle-actuated, for which types the INSEC routine must determine the length of each signal phase. Phase lengths are determined based on volume to green capacities of each approach to an intersection (Webster, 1958).

Delays and queue lengths are determined at an intersection on the basis of phase time, approach volume, and capacity (Newell, 1965). The referenced method of determining delay assumes a period of time during which traffic demand remains constant, and does not include a means of estimating queueing when volume exceeds capacity. For BATS, a method was devised to provide continuous functions for delay and queue length when volumes approach or exceed the intersection approach capacity. This method establishes a constant rate of increase in queue length beyond the point where average delay at the intersection equals one cycle length. The queue is assumed to increase at a constant rate beyond this point until volume exceeds capacity, at which point the queue increases at the rate that volume exceeds capacity. A queue is dissipated at the rate that capacity exceeds volume until the average queue length, based on the volume to capacity ratio of the intersection approach, is reached.

The results of the model, stored in the DELA and QUE arrays, are delay and queue length for each approach to an intersection.

3.10.2 Data Description

Symbol	Meaning
NI	Number of intersections
LIN(I,4)	Links approaching intersection I from the north, east, south, and west
ITYPC(I)	Type of control for intersection I
ICYCL(I)	Cycle time of intersection I
PH(I,4)	Phase time on the north-south, east-west, north-south left turn, or east-west left turn to intersection I
CI(I)	Clearance interval (i.e., yellow duration) at intersection I
GCAP(I,4)	Green capacity on the north, east, south and west approach to intersection I
QUE(I,4)	The average queue length at intersection I

3.10.3 Reports

H.2. INTERSECTION DELAYS AND QUEUEING

3.11 INSECU

3.11.1 Purpose

This subroutine predicts the delay and queue length at unsignalized intersections in the network. Three types of intersections can be handled: uncontrolled, two-way stop, and four-way stop. If not specified as an input parameter, the INSECU routine determines an intersection capacity based on the Highway Capacity Manual (HCM) (1965). For two-way stops and uncontrolled intersections, the HCM recommends that capacity be computed as if a signal were present and as if the signal split ratio equaled

$$\frac{\text{Volume}_1}{\text{Volume}_2} \times \frac{\text{Width}_2}{\text{Width}_1} .$$

At four-way stops, capacity is a function of the number of lanes and the demand split among approaches, as shown in Tables 6.7 and 6.8 of the Highway Capacity Manual. Queue length at an intersection is computed from classical queueing theory, i.e., QO = 1/(CAP/VOL) - 1. Average delay is a function of queue length times the time to process each vehicle.

3.11.2 Data Description

Symbol	Meaning
NSTOPS(L)	Number of stops made on link L
PNS	Proportion of stops on a link
DELA(L,J)	Delay going through, right, and left on link L
QUE(I,J)	Queue length of vehicles at intersection I, turning movement J.

3.11.3 Reports

H.2. INTERSECTION DELAYS AND QUEUEING

3.12 PARKING

3.12.1 Purpose

This routine models parking zone flow and determines vehicle running time for a zone. The running time of an average vehicle is considered to consist of three elements: (1) the time to travel from the edge of the zone to a stall or the time to travel from a stall to the edge of a zone (symbolized by TTA and TTD, respectively); (2) the delay experienced by arriving vehicles while waiting for vehicles to back out of stalls (DQ); (3) the average wait in a queue until a parked vehicle leaves the zone (AWQ).

TTA is computed on the basis of the length and speed of an average trip into the parking zone. It would appear that the length and speed of an average trip vary in direct and indirect proportion, respectively, to the utilization of a zone, and preliminary analysis of available data tends to support this supposition. TTD is the same as TTA, but with a time added to back out of a parking stall (PLBO).

DQ is the queued delay, due to interrrupted flow lasting PLBO seconds, experienced by vehicles arriving in the parking zone. AWQ is a minimum value or is the time required to service each vehicle times an average queue length estimated from the utilization of the parking zone.

3.12.2 Data Description

Symbol	Meaning
PC	Parking lot capacity
PVZ	Parked vehicles at end of time period
PLS	Parking lot speed

AWQ	Average wait in queue
TTA	Travel time arriving
BQ	Backing queue-waiting for vehicles to back out of stalls
ZV(Z)	Trip generations from parking zone Z
VZ(Z)	Parking arrivals at parking zone Z

3.12.3 Reports

H.3. PARKING LOT TRAVEL TIMES AND DELAYS

3.13 COORXY

It is necessary to know the direction of flow on the link (i.e., which end point traffic moves toward). This subroutine reorganizes the x,y coordinates of any link, L, so that X1(L),Y1(L) represent the upstream end of the link and X2(L),Y2(L) represent the downstream end of the link.

3.14 PLOT1

3.14.1 Purpose

This subroutine initializes values used for plotting the volume flow maps. This subroutine also plots a link or link and zone map if called for.

3.14.2 Data Description

Symbol	Meaning
EPSLON1	Distance between volume lines in map units (inches)
SCALE	The factor for converting inches to feet (feet)
EPSLON2	Height of hairs used to mark congestion (inches)
EPSLON3	Distance between hairs (inches)
CHGHT	Character height of printer characters in map units (feet)
XMIN	X coordinate of lower left corner of area to be plotted
XMAX	X coordinate of upper right corner of area to be plotted
YMIN	Y coordinate of lower left corner of area to be plotted
YMAX	Y coordinate of upper right corner of area to be plotted

3.14.3 Reports

A.1. INPUT LISTING. (prints out the XMIN,XMAX,YMIN,YMAX coordinates)

3.14.4 Subroutines Called

The following subroutines are called: PLOT, PRESCAN, NUMBER, PLOTS, PTRAF, SYMBOL.

3.15 PLOTA

3.15.1 Purpose

This subroutine accumulates data that will later be used to make summary plots of volumes on the link network.

3.15.2 Data Description

Symbol	Meaning
HRVOL(I)	The sum for hourly volume plots for link I
DYVOL(I)	The sum for daily volume plots for link I
QUEUE(I)	The queue length on link I
CAPMAX	The queue length that represents congestion
IOVRCAP(I)	The overcapacity links are marked with a -1 for a.m. rush and 1 for the p.m. rush hour.

3.16 PLOTP

3.16.1 Purpose

This subroutine causes a plot to be written on the output device, writes a heading by calls to Calcomp routines, and calls PTRAF to do the network plot.

3.16.2 Data Description

Symbol	Meaning
IUSE(L)	Tells whether this link L has been plotted
VOLMAX	The upper volume limit rounded off

3.16.3 Subroutines Called

The following subroutines are called: NUMBER, PLOT, PTRAF, SYMBOL.

3.17 AQAMF

3.17.1 Purpose

This subroutine accumulates the data results of the BATS program. The BATS model generates Data Set 20, 28, 29, 30, 31, and 32. The data include for each zone the average speed in the zone and the vehicle miles traveled, and for each link the average speed on the link and the number of vehicles driving the link. These data must be converted to yearly values from the BATS results.

3.17.2 Data Description

Symbol	Meaning
NUMVA	Number of internal zones
NP	Number of links which surround a zone
XCENT	Center of the zone--X coordinate
YCENT	Center of a zone--Y coordinate
HT	Height
PL	Length of one side of a zone (zone will be assumed to be square by AQAM)
AVSPD(Z)	Average speed within the zone Z, miles per hour
VMILEM(I)	Yearly vehicle miles driven by vehicles of type I
SFCS(Z)	Fraction of cold start vehicles on link
SFHS(Z)	Fraction of hot start vehicles on link
NHSOAK	Number of hot soak vehicles parked in lot (recently parked vehicles)
VMILEC(I)	Yearly civilian vehicle miles driven by vehicles of type I
SFRAMI(Z,1)	Fraction of vehicles leaving zone Z that are military
SFRAMI(Z,2)	Fraction of vehicles arriving at zone Z that are military
NL	Number of line sources in network
X1(L)	X coordinate of line source L
Y1(L)	Y coordinate of line source L
HEIGHT(L)	Height above average terrain of line source L

WIDTH	Width of line source (meters)
X2(L)	X coordinate of other end of line source L
Y2(L)	Y coordinate of other end of line source L
AVSPD(L)	Average speed on link L
PCCO(L)	Percent cold start on link L
PCHO(L)	Percent hot start vehicles on link L
NCOLDM(K)	Number of cold military vehicles on link L that are type K
NHOTS	Number of hot soak vehicles on link
SPRT(Z)	Sum of the parking lot running times
SVZ(Z)	Sum of the parking lot arrivals, zone Z
SZV(Z)	Sum of the parking lot departures, zone Z
SCOUNT(I,L)	Sum of the counts on link L

3.17.3 Reports

The results of AQAMF are stored on Tape 7. These are in card format and could be printed or input to the AQAM program.

3.18 LETTER

3.18.1 Purpose

This subroutine prints an output page heading in large block letters.

3.18.2 Data Description

Symbol	Meaning
NYEAR	The date of the run
LHEAD(1)	The air base name, 12 characters
LHEAD(3)	The run identification, 12 characters

3.18.3 Reports

Blocked Run Title Page

3.18.4 Subroutines Called

The following subroutines are called: TOFC, CHARAC.

3.19 TOFC

This subroutine stores the characters comprising the table of contents, and writes the table of contents.

3.20 CHARAC

This subroutine stores the 26 letters of the alphabet and the 10 numbers as data for block heading printout.

3.21 GATFUN

3.21.1 Purpose

This subroutine creates an array associating zones with gates. The contribution that each zone makes to each gate count determines if a zone is associated with that gate, and the contributions from a gate to a zone determines if that zone is associated with the gate.

3.21.2 Data Description

Symbol	Meaning
LIZG(J,Z)	List of the gates which contribute to each zone, ordered with heavy contributors first.
LIGZ(I,G)	List of the zones which contribute to each gate, ordered with heavy contributors first.
NEXT1	Number of external zones plus 1.
VDOV(Z,G)	Gate G to zone Z and zone Z to gate G person trip counts.
MATRIX(G,Z)	Set =1 if a zone is associated with a gate.

3.22 SUMIT

3.22.1 Purpose

This subroutine stores the vehicle counts into the COUNT array.

3.22.2 Data Description

Symbol	Meaning
ZVEH(I)	Civilian vehicles of type I traveling on L
ZVEHM(I)	Military vehicles of type I traveling on L

COUNT(I,L)	Count of vehicles by turning movement, type, or hot/cold status on link L
DIV	The divisor, either 1 or 2, used to break down trips if they are following more than one route

3.23 PRESCAN

3.23.1 Purpose

This subroutine finds the maximum and minimum x,y coordinates for the air base.

3.23.2 Data Description

Symbol	Meaning
X1(L),X2(L)	X coordinate of link L
Y1(L),Y2(L)	Y coordinate of link L

3.24 PTRAF

3.24.1 Purpose

This subroutine plots the volumes associated with each plot by multiple lines and printed characters. If zone labels are called for on the plot, a call to ZLABEL is made. It also plots the left boundary and labels the corners with x,y coordinates. Then it calls PPLOT to plot the link. At the end it plots the right boundary and labels the corners.

3.24.2 Data Description

Symbol	Meaning
UPBNDY	Upper boundary--the Y coordinate. This limits the size of the plot when more than one plot is required for a base.
LPLTF	Flag indicating: 0 = zone labels are not to be included on any map; 1 = zone labels are to be included on volume plots; 2 = zone labels are to be included on link map.

3.24.3 Reports

"BOUNDS" indicates the lower left X, upper right X, lower left Y and upper right Y bounds for the current plot.

3.24.4 Subroutines Called

The following subroutines are called: PLOT, NUMBER, PPLOT, SYMBOL, ZLABEL.

3.25 PPLOT

3.25.1 Purpose

This subroutine plots the links by calling PLOTLK, starting with the first link and taking the closest next. The IUSE array is changed from "not used" = 0, "used" = 2 or "part used" = 1. Subroutine CLOSEST is used to determine the next closest link.

3.25.2 Data Description

Symbol	Meaning
NOTDRW	Link is not drawn at all = 0
IDRAWN	Link is completely drawn = 2
IPTDRW	Link is partly drawn = 1
IOFFSCL	Link is completely off scale = -1

3.25.3 Reports

If all the links are searched and no new links are found, then the IUSE array is printed out without a title.

3.25.4 Subroutines Called

The following subroutines are called: PLOTLK, CLOSEST.

3.26 CLOSEST

3.26.1 Purpose

This subroutine finds the closest undrawn link and puts its number in NEWLK to be passed back to the calling program. It returns NEWLK = 0 if no closest link is found.

3.26.2 Data Description

Symbol	Meaning
X1(I)	X_1 coordinate of link I
Y1(I)	Y_1 coordinate of link I
X2(I)	X_2 coordinate of link I
Y2(I)	Y_2 coordinate of link I

3.26.3 Subroutine Called

PDIST is the only subroutine called.

3.27 PDIST

3.27.1 Purpose

This subroutine finds the distance between the current pen position (PENX,PENY) and point (A,B).

3.27.2 Data Description

Symbol	Meaning
PENX	The last X position of the pen in map coordinates
PENY	The last Y position of the pen in map coordinates
A	X coordinate of point
B	Y coordinate of point

3.28 PLOTLK

3.28.1 Purpose

This subroutine finds volume of traffic by calling PFNDVOL, plots each half street with proper width lines by calling PLOTLN, marks each link as drawn or part drawn, marks overcapacity links, and labels links.

3.28.2 Data Description

Symbol	Meaning
LK	Link number
LFLG	Flag indicating hourly (=1) or summary (=2) plot
TOD	Time of day

QUEUE(LK)	Length of queue from which capacity measure made
CAPMAX	Maximum length queue associates with congestion

3.28.3 Subroutines Called

The following subroutines are called: LABEL, OVERCAP, PDISP, PFNDVOL, PLOTLN.

3.29 PFNDVOL

3.29.1 Purpose

This subroutine finds the volume of traffic on a link, LK, and converts this to a number of lines, NL. The volume is saved in LABL.

3.29.2 Data Description

Symbol	Meaning
LK	Link number
NL	Number of lines to be plotted to show the volume
LFLG	Flag for hourly or summary plot, LFLG = 0-no volume lines, number links; LFLG = 1-hour volume lines, hour volume numbers; LFLG = 2-day volume lines, day volume numbers
LABL	Label value (i.e., volume)

3.30 PDISP

3.30.1 Purpose

This subroutine displaces a plot line an epsilon distance to the right of the direction of traffic flow (which is from X1,Y1 to X2,Y2).

3.30.2 Data Description

Symbol	Meaning
X1,Y1	Upstream end of link
X2,Y2	Downstream end of link
EPSLON1	Distance between lines

3.31 OVERCAP

3.31.1 Purpose

This subroutine draws overcapacity tic marks or hairs by calling PLOTLN and RETURN TO 2 when there is no line to plot because it is off the plot, i.e., beyond the lower left and upper right x,y coordinates specified for this plot.

3.31.2 Data Description

Symbol	Meaning
DISTANC	Distance X1,Y1 to X2,Y2
X1,Y1,X2,Y2	End points of a line to be plotted
A,B	End point of a tic mark
C,D	Other end of the tic mark--same as X1,Y1
T1,T2	End of the tic mark corresponding to C,D. This is offset for the afternoon period.
EPSLON3	Distance between tic marks

3.31.3 Subroutines Called

The following subroutines are called: PDISP2, PDISP3, PLOTLN.

3.32 LABEL

3.32.1 Purpose

This subroutine labels a line with the volume count. The distance between the line and the label is EPSLON2.

3.32.2 Data Description

Symbol	Meaning
X1,Y1,X2,Y2	Coordinates of the line to be labeled
THETA	Angle of the line
DIST2	Distance to the place where the character printing begins
NCHAR	Number of characters to be printed
IBCD	Characters to be printed
ITRKFG	Flag telling if link is completely plotted

HT	Character height in inches
SCALE	Converts from feet to inches

3.32.3 Subroutine Called

The following subroutines are called: CHKBND, PDISP2, SYMBO2.

3.33 ZLABEL

3.33.1 Purpose

This subroutine prints the names or number of the zones within each zone.

3.33.2 Data Description

Symbol	Meaning
CHGHT	Character height
XSUM	Average of the X coordinates of the lines defining the zone
YSUM	Average of the Y coordinates of the lines defining the zone

3.33.3 Subroutines Called

SYMBOL is the only subroutine called.

3.34 PLOTLN

3.34.1 Purpose

This subroutine draws a line between point X1,Y1 and X2,Y2. If the line is off the plot page, then it truncates the line and sets a flag.

3.34.2 Data Description

Symbol	Meaning
X1,Y1	Coordinates of line
X2,Y2	Coordinates of line

3.34.3 Subroutine Called

The following subroutines are called: CHKBND, PDIST, PLTSCL.

3.35 PLTSCL

3.35.1 Purpose

This subroutine scales the plot and calls the CALCOMP plot routine PLOT (1969).

3.35.2 Data Description

Symbol	Meaning
A	The x-coordinate of a point to move the pen to
B	The y-coordinate of a point to move the pen to
I	Indicates if the pen is up or down during the move

3.36 CHKBND

3.36.1 Purpose

This subroutine checks the boundaries of the plot to see if the line extends beyond the boundary, and truncates the line if necessary by calling XPTMOV or YPTMOV.

3.36.2 Data Description

Symbol	Meaning
X1,Y1,X2,Y2	x,y coordinates of the line
ITRKFG	Flag indicating if line is on a plot window
DNBNDX	Lower left X boundary
DNBNDY	Lower left Y boundary
UPBNDX	Upper right X boundary
UPBNDY	Upper right Y boundary

3.36.3 Subroutines Called

The following subroutines are called: XPTMOV, YPTMOV.

3.37 PTMOVE

3.37.1 Purpose

This subroutine moves the end points of a line that is out of the plot window along the line to the edge of the plot so that the end points of the line are within the plot window.

3.37.2 Data Description

Symbol	Meaning
XA,YA	Point which is out of bounds
XB,YB	Point which may be in bounds
BOUND	The X or Y bound
IB	0 = test lower bound, 1 = test upper bound
S	Slope of line

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Appendix A

PROGRAM LISTING

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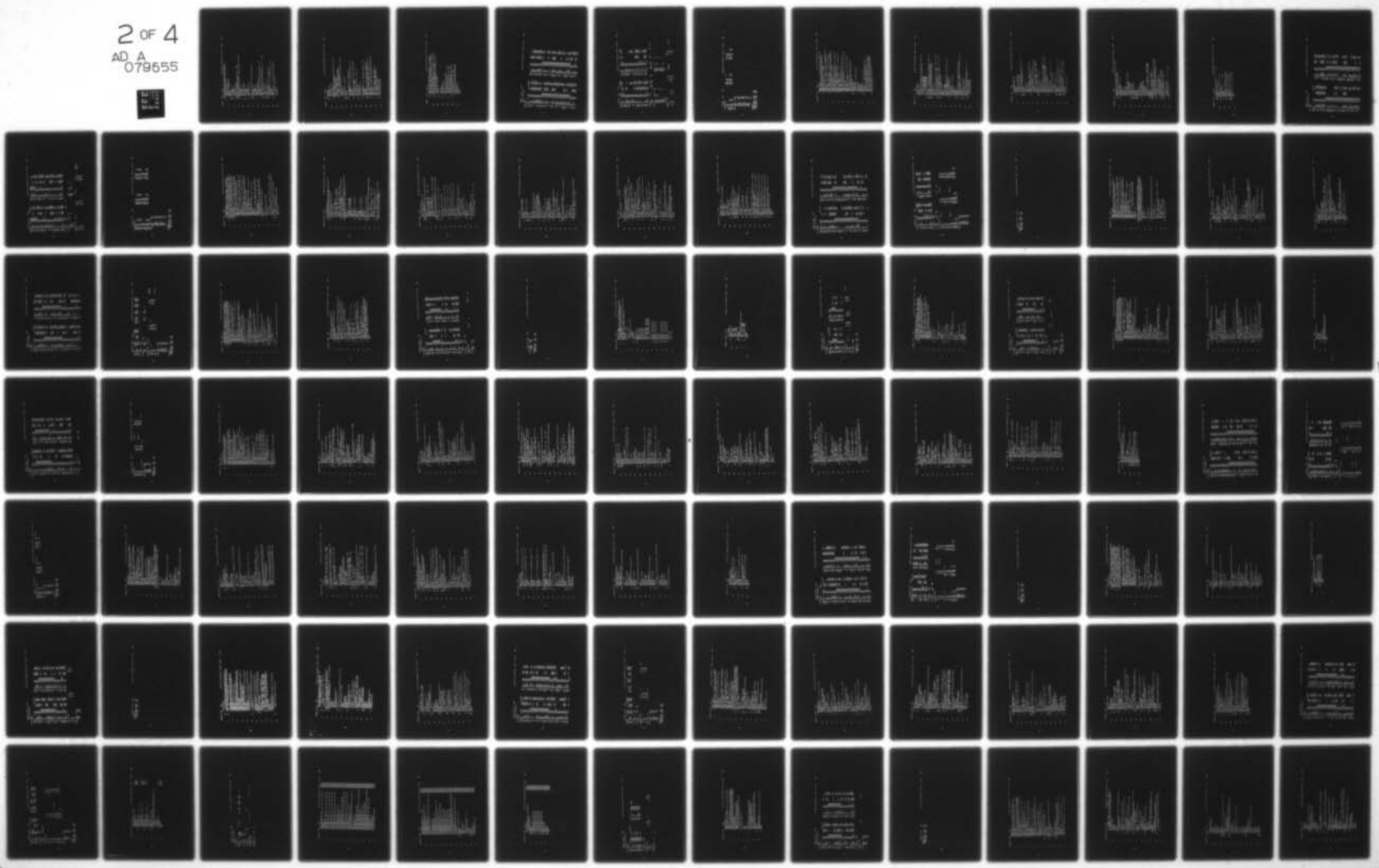
      PROGRAM BATS (INPUT, OUTPUT,TAPE6=OUTPUT,TAPE5=INPUT,
     1 TAPE1,TAPE7,TAPE27=TAPE1)
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
     2,NDEMVC,NNAME,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /CHD/ TODE,TODS,BAT(3),NYR,NMO,NDAY
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON / INTRST/ NINS, LIN(70,4),ITYPC (70), CYCL(70), PH(70,4),
     1 CI(70), GCAP(70,4), QUE(70,4)
      COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
     1ZGENR (50), NEXT, ZAT(2), ZGT(2), VEHTYP(6,50), ZNAME(50),FCS(50)
     2,VTYPM(7,50),FRAMIL(50,2),NEXT1,LANDU(50)
      INTEGER ZLINKS,ZNAME
      COMMON /DEMVAR/ NDV,DVNAME(10),VAR(10,50)
      COMMON /TRIP/ NTRIP,FCSP(15,2),IFCSIZ(15),PURP(15), NVARO(4,15)
     1,COEFO(4,15),NVARD(4,15),COEFD(4,15),NTRIPC
     2,LANDO(4,15),LANDD(4,15),PLUALU(7,7,3)
      COMMON / GATE/ NGATE, LGATE(2,10), VCR(10, 2,4),GCOUNT(2,10),
     1GCNT15(10,2,4),NGATE1
      COMMON/VOLUME/ COUNT(18,240)
      COMMON /VEHLOD/ NVLF,VLF(7),VLFM(7), PVPI
      COMMON /TROUT/ IGT,ITYP1,ITYP2,ITOZ(50),ITDZ(50),ITR(96)
      COMMON /SHIFT/ NS,SHFPCT(50,2,4)
      COMMON /PARKZ/ PZ,   PV(50), PLA(50), VZ(50), ZV(50),PD,PLS,PLBO
     1,  PNOS(50) , PLL(50)
      INTEGER PNOS,PZ
      COMMON /RESLT/ TT(240,3),DELA(240,3),PRT(50),QUEUE(240)
      COMMON /CAPMAX/QUL
      COMMON R(240),C(240),RG(10,240),CG(10,240)
      INTEGER R,RG
      COMMON NTO(50,15),NTD(50,15),OV(50,11),VD(50,11)
      DIMENSION GATETT(10,2,3)
      DIMENSION SCOUNT(240,3)
      DATA (BAT(I),I=1,3)/10H***BATS MO,10HDEL OUTPUT,3H***/
      DATA ((PLUALU(I,J,1),J=1,7),I=1,7)/
     1567.,  0.,416.,324.,415.,  0.,171.,
     2 40.,  0., 54., 76.,  0., 26., 87.,
     3253., 37.,207.,177.,242.,149.,373.,
     4385., 73.,138.,265.,102., 64., 27.,
     5423.,  0.,243.,272.,  0.,  0.,  0.,
     6 87.,  0., 67.,129.,  0.,  0.,131.,
     7433.,  0.,274.,220.,  0.,112.,  0./
      DATA ((PLUALU(I,J,2),J=1,7),I=1,7)/
     11174., 51.,671.,1593.,836., 87.,604.,
     2 51., 17., 91.,334., 28., 26., 87.,
     3671., 91.,414.,706.,485.,216.,647.,
     41593.,334.,706.,1109.,840.,434., 555.,
     5836., 28.,485.,840.,  0., 51., 133.,
     6 87., 26.,216.,434., 51., 10.,243.,
     7604., 87.,647.,555., 133.,243., 89./
      DATA ((PLUALU(I,J,3),J=1,7),I=1,7)/
     1567., 40.,253.,365.,423., 87.,433.,
```

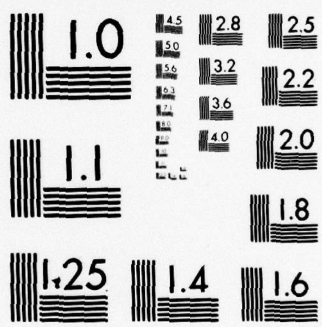
```
          2 0.,  0., 37., 73.,  0.,  0.,  0.,
          3418., 54.,207.,138.,243., 67.,274.,
          4324., 76.,177.,265.,272.,128.,220.,
          5415.,  0.,242.,102.,  0.,  0.,  0.,
          6 0., 26.,149., 64.,  0.,  0.,112.,
          7171., 87.,373., 27.,  0.,131.,  0./
           DATA PLBO/12.0/,PLS/15.0/,PD/33.4/,FCS/50*0./
           DATA PLA/50*0./,PV/50*0./,QUE/280*0./,NSTOPS/240*0/
     1     DO 11 IZ=1,240
           DO 11 J=1,18
    11     COUNT(J,IZ)= 0.0
           CALL SECOND (RT1)
           CALL INPT
           CALL SECOND (RT2)
           DO 110 L=1,NLINK
           DO 110 J=1,3
   110     SCOUNT(L,J)=COUNT(J,L)
           RT3=RT2-RT1
           PRINT 111,RT1,RT2,RT3
   111     FORMAT (4H T1=,F8.3,4X,3HT2=,F8.3,4X,6HT2-T1=,F8.3)
*   TEST FOR FIRST TIME THRU AND INITIALIZE IF TRUE
    14     IF (IST .GE. 1) GO TO 3
           IST = 1
*          CALL SECOND (RT1)
*          CALL COORXY
           PRINT 914, LHEAD
   914     FORMAT(21H1 B.  INITIALIZATION ,7A10)
           CALL ZAREA
*          CALL SECOND (RT2)
*          RT3=RT2-RT1
*          PRINT 111,RT1,RT2,RT3
*
*   INITIALIZE VOLUME TO CAPACITY RATIO INVERSES
           DO 2   IG = 1,NGATE
           DO 2 K=1,2
           DO 2   J  = 1,4
     2     VCR(IG,K,J) = 2.0
*
*   INITIALIZE LINK TO LINK TRAVEL TIMES
           DO 22  L  = 1,NLINK
           X1MX2=X1(L)-X2(L)
           Y1MY2=Y1(L)-Y2(L)
           DIST(L) = SQRT(X1MX2*X1MX2+Y1MY2*Y1MY2)
           TTIME = DIST(L)/(VEL(L)*0.447)/(.9+.1*NLANE(L))
           DO 22  J  = 1,3
    22     TT (L,J) = TTIME
*
*   ROUTE VEHICLES SPECIFIED AS TOTALT (TOTAL TRIPS ATTRACTED AND GENERAT
*   ED) ONTO THE LINKS OF THE NETWORK
*
C    GENERATE TRIP END ATTRACTIONS AND PRODUCTIONS AS LINEAR
C    FUNCTIONS OF 4 DEMOGRAPHIC VARIABLES AND 15 TRIP PURPOSES
     3     NS1=1
           IF(IOPT(4).GT.0) NS1=4
           DO 70 ITM=1,NS1
```

```
      TP15 = TP/NS1
      TODS = TOD + (ITM-1)*TP15/60.
      TODE = TODS + TP15/60.
      TPSAV=TP
      IF(AMOD(TODE,100.).GE.60.)TODE=TODE+40.
      IF(AMOD(TODS,100.).GE.60.)TODS=TODS+40.
      DO 302 L=1,NLINK
      DO 301 J=1,3
  301 COUNT(J,L)=SCOUNT(L,J)/NS1
      DO 302 J=4,18
  302  COUNT(J,L)=0.0
*     PRINT 9999,(BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
*    1TODS,TODE
 9999 FORMAT(1H1,2A10,A3,7X,I2,1H/,I2,1H/,I2,5X5A10,6X,
     112HPERIOD FROM F5.0,4H TO F5.0,6H HOURS)
C     GENERATE ROUTES AND TRAVEL TIMES FROM EACH GATE
C INITIALIZE ACCESS TIMES TO ALL GATES = 10000 SEC.
C SO VEHICLE TRIPS WILL EITHER BE EXTERIOR OR INTERIOR TO BASE.
      DO 306 IG=1,NGATE
      DO 306 IORE=1,2
      L1=LGATE(IORE,IG)
      IF (L1.LE.0) GO TO 306
C SEARCH THE LCON ARRAY FOR LINKS CONNECTING TO L1.
      DO 305 L=1,NLINK
      DO 305 J=1,3
      IF (LCON(L,J).NE.L1) GO TO 305
C SAVE TRAVEL TIMES.
      GATETT(IG,IORE,J)=TT(L,J)
      TT(L,J)=1.0E4
  305 CONTINUE
  306 CONTINUE
*     CALL SECOND (RT1)
      DO 31 IG=1,NGATE
      CALL MNPATH(LGATE(1,IG),2,1.,1.)
      DO 31 L=1,NLINK
      RG(IG,L)=R(L)
   31 CG(IG,L)=C(L)
*     CALL SECOND (RT2)
*     RT3=RT2-RT1
*     PRINT 111,RT1,RT2,RT3
C     REPLACE TRAVEL TIMES.
      DO 316 IG=1,NGATE
      DO 316 IORE=1,2
      L1=LGATE(IORE,IG)
      IF (L1.LE.0) GO TO 316
      DO 315 L=1,NLINK
      DO 315 J=1,3
      IF (LCON(L,J).EQ.L1) TT(L,J)=GATETT(IG,IORE,J)
  315 CONTINUE
  316 CONTINUE
*     CALL SECOND (RT1)
      CALL TRIPGEN
*     CALL SECOND (RT2)
*     RT3=RT2-RT1
*     PRINT 111,RT1,RT2,RT3
```

AD-A079 555 SRI INTERNATIONAL MENLO PARK CA F/G 15/5
USER GUIDE FOR THE AIR FORCE BASE AUTOMOTIVE TRANSPORTATION SIM--ETC(U)
SEP 79 R SANDYS F08635-76-D-0132
UNCLASSIFIED AFESC/ESL-TR-79-16-VOL-2 NL

2 OF 4
AD A
079555




1.0
4.5
5.0
5.6
6.3
2.8
3.2
3.6
4.0
2.5
2.2
2.0
1.1
1.8
1.25
1.4
1.6

```
      C  DISTRIBUTE PERSON TRIPS AMONG ORIGIN-DESTINATION ZONES
      C   THE REMAINING ROUTINES USE GCNT15 ARRAY VICE GCOUNT
            IF(IOPT(4).GT.0) GO TO 319
            DO 318 IG=1,NGATE
            GCNT15(IG,1,1)=GCOUNT(1,IG)
            GCNT15(IG,2,1)=GCOUNT(2,IG)
        318 CONTINUE
        319 TP=TP/NS1
      *     CALL SECOND (RT1)
         32  CALL GRAVO
      *     CALL SECOND (RT2)
      *     RT3=RT2-RT1
      *     PRINT 111,RT1,RT2,RT3
      C  MODAL SPLIT DETERMINES O-D BY VEHICLE TYPE.  PARKED
      C  VEHICLES GO INTO VZ AND ZV ARRAYS.
      C  DETERMINE THE TOTAL PARKING TRIPS ATTRACTED OR PRODECED BY EACH ZONE
      *     CALL SECOND (RT1)
            CALL MODAL
      *     CALL SECOND (RT2)
      *     RT3=RT2-RT1
      *     PRINT 111,RT1,RT2,RT3
      *     CALL SECOND (RT1)
         35  CONTINUE
            CALL SMOOTH
      *     CALL SECOND (RT2)
      *     RT3=RT2-RT1
      *     PRINT 111,RT1,RT2,RT3
      *
      *  ASSIGN THE VEHICLES ONTO LINKS AND ADD TO COUNT ARRAY
         38 CONTINUE
      *     CALL SECOND (RT1)
            CALL ASSIGN
      *     CALL SECOND (RT2)
      *     RT3=RT2-RT1
      *     PRINT 111,RT1,RT2,RT3
            IF(IPFLG(3).NE.0) GO TO 39
            PRINT 9999,(BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
           1TODS,TODE
            PRINT 938, (L,(COUNT(J,L),J=1,4),L=1,NLINK)
        938 FORMAT (1H05X*H.1. LINK COUNTS*//5(26H LINK   THRU   RT   LT   TERM   )
           1 /5(I4,1X,4F5.0,1X))
         39 DO 40 L = 1, NLINK
            DO 395 K=1,3
        395 TT(L,K) = DELA(L,K) = 0.0
         40 QUEUE(L) = 0.0
      *  FIND DELAY AND QUEUE LENGTHS AT INTERSECITONS
      *     CALL SECOND (RT1)
            PRINT 9999,(BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
           1TODS,TODE
            PRINT 943
        943 FORMAT(1H05X,*H.2. INTERSECTION DELAYS AND QUEUEING*)
            DO  45 I=1,NINS
            IF (ITYPC(I) .GT. 0) GO TO 43
            CALL INSECU
            GO TO 45
```

```
 43   CALL INSEC
 45   CONTINUE
  *   CALL SECOND (RT2)
  *   RT3=RT2-RT1
  *   PRINT 111,RT1,RT2,RT3
      CAPL = 1600.
      DO 465 L=1,NLINK
  * DETERMINE AVERAGE QUEUE LENGTH IN FEET ON EACH LINK AT 9 M/VEH.
      QUEUE(L) = QUEUE(L)*9.0/NLANE(L)
      QUEUE(L)=AMIN1(QUEUE(L),DIST(L))
      IF(VEL(L) .LE. 0) GO TO 465
  *  MODIFY VELOCITY VASED ON A SIMPLE LINK MODEL
      SC = (COUNT(1,L)+COUNT(2,L)+COUNT(3,L))*3600/TP
      V = VEL(L)*(1.0-.5*SC/(NLANE(L)*CAPL))
      IF ( VEL(L) .LT. 50.) V= VEL(L)*(1.-.25 *SC/(NLANE(L) *CAPL))
  *   CORRECT TO M/SEC
      V = V*0.447
      DO 46 K=1,3
 46   TT(L,K) = DIST(L)/V + DELA(L,K)
465   CONTINUE
 47   CONTINUE
  *
  * FIND THE RUNNING TIMES IN THE PARKING ZONES
  *   CALL SECOND (RT1)
      PRINT 9999,(BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
     1TODS,TODE
      PRINT 957
957   FORMAT(1HO5X*H.3. PARKING LOT TRAVEL TIMES AND DELAYS*)
      DO 57  PZ = NEXT1,NZONES
      CALL PARKNG
      PV(PZ) = AMAX1(PV(PZ)+VZ(PZ) - ZV(PZ), 0.0)
 57   PRT( PZ) = TTPZ
  *   CALL SECOND (RT2)
  *   RT3=RT2-RT1
  *   PRINT 111,RT1,RT2,RT3
  *
  * WRITE OUT RESULTS
      PRINT 9999,(BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
     1TODS,TODE
      PRINT 960
960   FORMAT(1HO5X*H.4. LINK TO LINK TRAVEL TIMES(SECONDS)*)
      WRITE (6, 961) (L,(TT(L,K),K=1,3),L =1,NLINK)
961   FORMAT (1HO, 6(20HLINK  TRAVEL TIMES  )/(1X,6(I3,2X,3F5.0   )))
      SUMTT = SVMT = SDELA = SNSTOP = SQI = SRT = 0.0
      PRINT 9615
9615  FORMAT(1HO5X*I.1. NETWORK SUMMARY PARAMETERS FOR TIME PERIOD*)
      DO 63 L=1,NLINK
      DO 62 K=1,3
      SUMTT = TT(L,K)*COUNT(K,L)/3600. + SUMTT
      SVMT = COUNT(K,L)*DIST(L)/5280.0*3.281 + SVMT
 62   SDELA = DELA(L,K)*COUNT(K,L)/3600.+SDELA
      SNSTOP = NSTOPS(L) + SNSTOP
 63   SQI = QUEUE(L) + SQI
      DO 64 PZ = NEXT1 , NZONES
 64   SRT = PRT(PZ)/3600. + SRT
```

```
         PRINT 962, SUMTT, SRT, SVMT
   962   FORMAT (29H-TOTAL TRAVEL TIME ON NETWORK, F21.0,9H(VEH-HRS) /
        1 36H TOTAL RUNNING TIME IN PARKING ZONES, F14.0, 9H(VEH-HRS)/
        2 40H TOTAL VEHICLE MILES TRAVELED ON NETWORK, F10.0, 8H(VEH-MI))
         PRINT 963, SDELA,SNSTOP,SQI
   963   FORMAT (36HOTOTAL INTERSECTION DELAY ON NETWORK,F14.0,9H(VEH-HRS)/
        1 29H TOTAL STOPS AT INTERSECTIONS, F21.0, 5H(VEH)/
        2 44H TOTAL OF INTERSECTION AVERAGE QUEUE LENGTHS,F6.0,4H(M) )
         IF(IOPT(2).NE.0) CALL PLOTA(0)
         IF(IOPT(6).NE.0) CALL AQAMA
    70   TP=TPSAV
    *
         IST=IST+1
    *    PRINT RESULTS
    *    CALL SECOND (RT1)
    *    PRINT 111,RT1,RT2,RT3
         ICONV=0
         QUL = EXP(FLOAT(IOPT(1)))/15.*9.0
    C    PLOT TP VOLUMES IF CALLED FOR
         IF(IOPT(2).EQ.1.OR.IOPT(2).EQ.3) CALL PLOTP(1)
    C    MAKE AQAM FILE FOR THIS TP
         IF(IOPT(6).EQ.1.OR.IOPT(6).EQ.3) CALL AQAMP
    C    MAKE SUMMARY PLOT OR AQAM FILE
         IF(IOPT(2).EQ.2.OR.IOPT(2).EQ.3) CALL PLOTP(2)
    C WRITE A PLOT TAPE INSTEAD OF CALLING PLOT
         IF(IOPT(2).EQ.0)
        1WRITE(1) NLINK,LCON,X1,Y1,X2,Y2,((COUNT(J,L),L=
        1 1,240),J=1,3),QUEUE,NZONES,NEXT1,ZLINKS,PNOS,
        2 ZNAME,TOD,QUL
    *    CALL SECOND (RT2)
         RT3=RT2-RT1
         GO TO 1
         END
```

```
      PROGRAM    BATS     TRACE                             CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.C2.       PAGE      7

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
10121  BATS

VARIABLES      SN  TYPE           RELOCATION
     2  BAT        REAL      ARRAY    CHD              360  C         REAL      ARRAY     / /
 11716  CAPL       REAL                               5500  CG        REAL      ARRAY     / /
  1275  CI         REAL      ARRAY    INTRST           361  COEFD     REAL      ARRAY     TRIP
   171  COEFO      REAL      ARRAY    TRIP               0  COUNT     REAL      ARRAY     VOLUME
   537  CYCL       REAL      ARRAY    INTRST          1320  DELA      REAL      ARRAY     RESLT
[illegible]1  DIST       REAL      ARRAY    LINK               6  DOW       REAL                COMM
     1  DVNAME     REAL      ARRAY    DEMVAR          2122  FCS       REAL      ARRAY     ZONES
     1  FCSP       REAL      ARRAY    TRIP              50  FEXAT     REAL      ARRAY     COMM
    44  FEXGEN     REAL      ARRAY    COMM              60  FINATT    REAL      ARRAY     COMM
    54  FINGEN     REAL      ARRAY    COMM            2742  FRAMIL    REAL      ARRAY     ZONES
 11730  GATETT     REAL      ARRAY                    1403  GCAP      REAL      ARRAY     INTRST
   171  GCNT15     REAL      ARRAY    GATE             145  GCOUNT    REAL      ARRAY     GATE
  5121  HEIGHT     REAL      ARRAY    LINK               0  I         INTEGER             COMM
 11727  ICONV      INTEGER                              37  IFCSIZ    INTEGER   ARRAY     TRIP
 11706  IG         INTEGER                               0  IGT       INTEGER             TROUT
    31  IOPT       INTEGER   ARRAY    COMM           11714  IORE      INTEGER
    24  IPFLG      INTEGER   ARRAY    COMM           11705  IST       INTEGER
    65  ITDZ       INTEGER   ARRAY    TROUT             13  ITM       INTEGER             COMM
     3  ITOZ       INTEGER   ARRAY    TROUT            147  ITR       INTEGER   ARRAY     TROUT
   431  ITYPC      INTEGER   ARRAY    INTRST             1  ITYP1     INTEGER             TROUT
     2  ITYP2      INTEGER            TROUT          11701  IZ        INTEGER
     3  J          INTEGER            COMM               4  K         INTEGER             COMM
     2  L          INTEGER            COMM             552  LANDD     INTEGER   ARRAY     TRIP
   456  LANDO      INTEGER   ARRAY    TRIP            3107  LANDU     INTEGER   ARRAY     ZONES
  2261  LCAP       INTEGER   ARRAY    LINK            3601  LCON      INTEGER   ARRAY     LINK
     1  LGATE      INTEGER   ARRAY    GATE              15  LHEAD     INTEGER   ARRAY     COMM
     1  LIN        INTEGER   ARRAY    INTRST         11715  L1        INTEGER
    40  NCLB       INTEGER            COMM               7  NDAY      INTEGER             CHD
    42  NDEMVC     INTEGER            COMM               0  NDV       INTEGER             DEMVAR
  1357  NEXT       INTEGER            ZONES           3106  NEXT1     INTEGER             ZONES
     0  NGATE      INTEGER            GATE             311  NGATE1    INTEGER             GATE
     0  NINS       INTEGER            INTRST             1  NLANE     INTEGER   ARRAY     LINK
     0  NLINK      INTEGER            LINK               6  NMO       INTEGER             CHD
    43  NNAME      INTEGER            COMM              37  NPLT      INTEGER             COMM
    41  NPLU       INTEGER            COMM               0  NS        INTEGER             SHIFT
  5501  NSTOPS     INTEGER   ARRAY    LINK           11712  NS1       INTEGER
 13616  NTD        INTEGER   ARRAY    / /            12240  NTO       INTEGER   ARRAY     / /
     0  NTRIP      INTEGER            TRIP             455  NTRIPC    INTEGER             TRIP
   265  NVARD      INTEGER   ARRAY    TRIP              75  NVARO     INTEGER   ARRAY     TRIP
     0  NVLF       INTEGER            VEHLOD            14  NYEAR     INTEGER             COMM
     5  NYR        INTEGER            CHD                1  NZLINKS   INTEGER   ARRAY     ZONES
     0  NZONES     INTEGER            ZONES          15174  OV        REAL      ARRAY     / /
   311  PD         REAL               PARKZ            645  PH        REAL      ARRAY     INTRST
    63  PLA        REAL      ARRAY    PARKZ            313  PLBO      REAL                PARKZ
   376  PLL        REAL      ARRAY    PARKZ            312  PLS       REAL                PARKZ
   646  PLUALU     REAL      ARRAY    TRIP             314  PNOS      INTEGER   ARRAY     PARKZ
  2640  PRT        REAL      ARRAY    RESLT             56  PURP      REAL      ARRAY     TRIP
     1  PV         REAL      ARRAY    PARKZ             17  PVPI      REAL                VEHLOD
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```
      PROGRAM    BATS     TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE      8

VARIABLES      SN  TYPE            RELOCATION
    0  PZ          INTEGER                PARKZ       2033  QUE        REAL       ARRAY    INTRST
 2722  QUEUE       REAL      ARRAY        RESLT          0  QUL        REAL                CAPMAX
    0  R           INTEGER   ARRAY        / /          740  RG         INTEGER    ARRAY    / /
11702  RT1         REAL                              11703  RT2        REAL
11704  RT3         REAL                              11717  SC         REAL
12024  SCOUNT      REAL      ARRAY                   11723  SDELA      REAL
    1  SHFPCT      REAL      ARRAY        SHIFT      11724  SNSTOP     REAL
11725  SGI         REAL                              11726  SRT        REAL
11721  SUMTT       REAL                              11722  SVMT       REAL
    5  TOD         REAL                   COMM           0  TODE       REAL                CHD
    1  TODS        REAL                   CHD           10  TOTATT     REAL                COMM
   12  TOTGEN      REAL                   COMM           7  TP         REAL                COMM
11713  TPSAV       REAL                                 64  TP15       REAL                COMM
    0  TT          REAL      ARRAY        RESLT      11711  TTIME      REAL
   11  TTPZ        REAL                   COMM       11720  V          REAL
   13  VAR         REAL      ARRAY        DEMVAR        25  VCR        REAL       ARRAY    GATE
16242  VD          REAL      ARRAY        / /         1364  VEHTYP     REAL       ARRAY    ZONES
 3221  VEL         REAL      ARRAY        LINK           1  VLF        REAL       ARRAY    VEHLOD
   10  VLFM        REAL      ARRAY        VEHLOD      2204  VTYPM      REAL       ARRAY    ZONES
  145  VZ          REAL      ARRAY        PARKZ         27  XP         INTEGER             COMM
  361  X1          REAL      ARRAY        LINK       11707  X1MX2      REAL
 1321  X2          REAL      ARRAY        LINK          30  YP         INTEGER             COMM
  741  Y1          REAL      ARRAY        LINK       11710  Y1MY2      REAL
 1701  Y2          REAL      ARRAY        LINK           1  Z          INTEGER             COMM
 1360  ZAT         REAL      ARRAY        ZONES       1213  ZATTR      REAL       ARRAY    ZONES
 1275  ZGENR       REAL      ARRAY        ZONES       1362  ZGT        REAL       ARRAY    ZONES
   63  ZLINKS      INTEGER   ARRAY        ZONES       2040  ZNAME      INTEGER    ARRAY    ZONES
  227  ZV          REAL      ARRAY        PARKZ

FILE NAMES         MODE
    0  INPUT                       2022  OUTPUT    FMT          4044  TAPE1      UNFMT         4044  TAPE27
    0  TAPE5                       2022  TAPE6     FMT          6066  TAPE7

EXTERNALS          TYPE   ARGS
       AMAX1       REAL      2                                      AMIN1      REAL       2
       AMOD        REAL      2                                      AQAMA                 0
       AQAMP                 0                                      ASSIGN                0
       EXP         REAL      1                                      FLOAT      REAL       1
       GRAVO                 0                                      INPT                  0
       INSEC                 0                                      INSECU                0
       MNPATH                4                                      MODAL                 0
       PARKNG                0                                      PLOTA                 1
       PLOTP                 1                                      SECOND                1
       SMOOTH                0                                      SQRT       REAL       1
       TRIPGEN               0                                      ZAREA                 0

STATEMENT LABELS
10122  1                              0  2                          10306  3
    0  11                             0  14        INACTIVE            0  22
    0  31                             0  32        INACTIVE            0  35          INACTIVE
    0  38        INACTIVE         10657  39                            0  40
10734  43                         10736  45                            0  46
    0  47        INACTIVE             0  57                            0  62
    0  63                             0  64                            0  70
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      PROGRAM      BATS       TRACE                      CDC 6700 FTN V3.0-355F OPT=0  79/06/17. 15.49.02.       PAGE      9

STATEMENT LABELS
     0  110                            11513  111      FMT                        0  301
     0  302                            10442  305                             10450  306
     0  315                            10552  316                                 0  318
 10603  319                                0  395                             11050  465
 11520  914      FMT                   11535  938      FMT                    11546  943      FMT
 11554  957      FMT                   11562  960      FMT                    11570  961      FMT
 11605  962      FMT                   11627  963      FMT                    11576  9615     FMT
 11524  9999     FMT

COMMON BLOCKS   LENGTH
      COMM          53
      CHD            8
      LINK        3121
      INTRST      1331
      ZONES       1657
      DEMVAR       511
      TRIP         568
      BATE         202
      VOLUME      4320
      VEHLOD        16
      TROUT        199
      SHIFT        401
      PARKZ        304
      RESLT       1730
      CAPMAX         1
      / /         7880

STATISTICS
  PROGRAM LENGTH      3234B       1692
   BUFFER LENGTH     10110B       4168
   COMMON LENGTH     34127B      14423
    BLANK COMMON     17310B       7880
```

```
      SUBROUTINE INPT
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
     2,NDEMVC,NNAME,FEXGEN(4),FEXATT(4),FINGEN(4),FINATT(4),TP15
      COMMON /CHD/ TODE,TODS,BAT(3),NYR,NMO,NDAY
      INTEGER Z,XP,YP
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /INTRST/ NINS, LIN(70,4),ITYPC(70),ICYCL(70),PH(70,4),
     1 CI(70), GCAP(70,4), QUE(70,4)
      COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
     1ZGENR (50), NEXT, ZAT(2), ZGT(2), VEHTYP(6,50), ZNAME(50),FCS(50)
     1,VTYPM(7,50),FRAMIL(50,2),NEXT1,LANDU(50)
      INTEGER ZLINKS,ZNAME
      COMMON /DEMVAR/ NDV,DVNAME(10),VAR(10,50)
      COMMON /TRIP/ NTRIP,FCSP(15,2),IFCSIZ(15),PURP(15), NVARO(4,15)
     1,COEFO(4,15),NVARD(4,15),COEFD(4,15),NTRIPC
     2,LANDO(4,15),LANDD(4,15),PLUALU(7,7,3)
      COMMON / GATE/ NGATE, LGATE(2,10), VCR(10, 2,4),GCOUNT(2,10),
     1GCNT15(10,2,4),NGATE1
      COMMON/VOLUME/ COUNT(16,240)
      COMMON /VEHLOD/ NVLF,VLF(7),VLFM(7), PVPI
      COMMON /TROUT/ IGT,ITYP1,ITYP2,ITOZ(50),ITDZ(50),ITR(24,4)
      COMMON /SHIFT/ NS,SHFPCT(50,2,4)
      COMMON / PARKZ/ PZ, PV(50),PLA(50), VZ(50), ZV(50),PD ,PLS,PLBO
     1, PNOS(50), PLL(50)
      INTEGER PNOS,PZ
      COMMON /PLOT/ XW,YW,SFAC,D1,H1,DH1,CH1,NLIN,LPLTF,XMX,YMX
      COMMON TARAY(3,4), INDIN(4)
      COMMON ITITLE(12)
       DATA XW,YW,SFAC,D1,H1,DH1,CH1,NLIIN,LPLTF/7*0.0,0,1/
      DATA XMX,YMX/2*0.0/,INITH/0/,INITA/0/,INITF/0/
      READ 910,NYEAR,LHEAD
  910 FORMAT(I6,7A10)
      IF(EOF(5)) 99,1
    1 NYR=NYEAR/10000
      IF(INITH.EQ.0) CALL LETTER(NYEAR,LHEAD)
      INITH=1
      NYR1=NYR*10000
      ND1=NYEAR-NYR1
      NMO=ND1/100
      ND2=NMO*100
      NDAY=ND1-ND2
  911 FORMAT(1H0,I2,1H/,I2,1H/,I2,5X7A10)
      PRINT 913
  913 FORMAT(3H1   *A.1. INPUT LISTING: OF EACH DATA CARD - *
     1*WITH MODIFICATIONS MADE BY SUBROUTINE INPT.*)
      PRINT 911, NYR,NMO,NDAY,(LHEAD(I),I=1,7)
      READ 912,IC,L,I,Z,NDV,NT,IG,KT,NVLF,NTR,NS,NPLT,NCLB,NPLU,
     1NDEMVC,NNAME,TOD,DOW,TP,TOTGEN,TOTATT,XP,YP,IOPT,IPFLG
      PRINT 912,IC,L,I,Z,NDV,NT,IG,KT,NVLF,NTR,NS,NPLT,NCLB,NPLU,
     1NDEMVC,NNAME,TOD,DOW,TP,TOTGEN,TOTATT,XP,YP,IOPT,IPFLG
  912 FORMAT (I2,10I4,5I1,F4.0,F3.0,3F5.0,11I1)
      IF(IC.NE.1) GO TO 99
```

```
      IF( EOF(5)) 99,2
2     IF(L .EQ. 0) GO TO 3
      NLINK = L
      DO 25 L1=1,NLINK
      READ 922, IC, L, (NLANE(L), X1(L),Y1(L),X2(L),Y2(L), LCAP(L),VEL
     1(L), (LCON(L,J),J=1,3), HEIGHT(L)) ,SCALXY,XAD,YAD
      IF(SCALXY .EQ. 0.0) SCALXY=1.0
      X1(L) = X1(L)*SCALXY+XAD*1000.
      X2(L) = X2(L)*SCALXY+XAD*1000.
      Y1(L) = Y1(L)*SCALXY+YAD*1000.
      Y2(L) = Y2(L)*SCALXY+YAD*1000.
23    CONTINUE
25    PRINT 923,IC, L, (NLANE(L), X1(L),Y1(L),X2(L),Y2(L), LCAP(L),VEL
     1(L), (LCON(L,J),J=1,3), HEIGHT(L)) ,SCALXY,XAD,YAD
922   FORMAT(I2,I3,I5,4F5.0,I5,F5.0,3I5,F5.0, F10.5,2F5.1)
923   FORMAT(I2,I3,I5,4F10.0,I5,F5.0,3I5,F5.0,F10.5,2F6.1)
      CALL COORXY
3     IF(I .EQ. 0) GO TO 4
      NINS = I
      READ 9330, (IC,I,  (LIN (I,J),J=1,4), ITYPC(I), ICYCL(I),(PH(I,K)
     1, K=1,4),CI(I),(GCAP(I,M),M=1,4) ,I1=1,NINS)
9330  FORMAT (I2,I3,6I5,5F4.0,4F4.0)
      PRINT 933, (IC,I,( (LIN (I,J),J=1,4), ITYPC(I), ICYCL(I),(PH(I,K)
     1, K=1,4),CI(I),(GCAP(I,M),M=1,4)),I =1,NINS)
933   FORMAT (I2, I3, 6I5, 5F4.0,4F5.0)
4     IF(Z .EQ. 0) GO TO 5
      NZONES = Z
      NEXT=50
      Z=1 $ IZ= NZONES
      DO 49 KZ = 1,NZONES
      READ  944, (IC,IEXT, (VEHTYP(J,KZ),J=1,6),(VTYPM(J,KZ),J=1,7),
     1PNOS(KZ),(ZLINKS(K,KZ),K=1,12))
      IF(IC .NE. 4) CALL ABORT
944   FORMAT (I2,A2,13F2.0,I2,12I4)
      ZNAME(KZ) = IEXT
      DO 474 K=1,12
      IF (ZLINKS(K,KZ).NE.0) GO TO 474
      NZLINKS(KZ)=K-1
      GO TO 475
474   CONTINUE
      NZLINKS(KZ)=12
475   CONTINUE
      IF(ZNAME(KZ).EQ.2H 1 .OR. ZNAME(KZ).EQ.2HZ1) NEXT=KZ-1
      PRINT 949, IC, ZNAME(KZ), (VEHTYP(J,KZ),J=1,6),(VTYPM(J,KZ),J=1,7)
     1,PNOS(KZ),(ZLINKS(K,KZ),K=1,12)
49     CONTINUE
      NEXT1=NEXT+1
949   FORMAT(I2,A2,13F3.0,I2,12I4)
5     IF ( NDV .EQ. 0) GO TO 59
      DO 58 KZ=1,NDV
      READ 956,  IC,IBL,LANDU(KZ),PLC,PVEH,(VAR(J,KZ),J=1,10)
956   FORMAT(I2,A2,I1,2F4.0,8F7.0,F4.0,F7.0)
      IF (NEXT.LT.KZ) GO TO 56
      IF (PLC.NE.0) PLA(KZ)=PLC
      IF (PVEH.NE.0) PV(KZ)=PVEH
```

```
      PLA(KZ)=AMAX1(PLA(KZ),1.0)
      PV(KZ)=AMAX1(PV(KZ),1.0)
      GO TO 57
   56 CONTINUE
      IF(PLC.NE.0.)PLA(KZ)=PLC*PD
      IF(PVEH.NE.0.) PV(KZ)=PVEH
   57 CONTINUE
      IF (IBL.NE.ZNAME(KZ)) STOP56
      PRINT 957,IC,IBL,LANDU(KZ),PLC ,PVEH,(VAR(J,KZ),J=1,10)
  957  FORMAT(I2,A2,I1,2F5.0,8F8.0,F5.0,F8.0)
   58 CONTINUE
   59  NDV=10
    6 IF(NT.EQ.0) GO TO 7
      NTRIP = NT
      NTRIPC=NTRIP-1
      DO 65 K=1,NTRIP
      READ 96, IC,PURP(K),(FCSP(K,I),I=1,2),(LANDO(I,K),
     1NVARO(I,K),COEFO(I,K),COEFD(I,K),I=1,4)
   96 FORMAT(I2,A10,2F2.2,4(I1,I2,2F6.4))
      IF(IC.NE.6) CALL ABORT
      IF(AND(PURP(K),MASK(6)).NE.AND(1HM,MASK(6))) NTRIPC=K
      IFCSIZ(K)=0
      IF(FCSP(K,1).LE.0..AND.FCSP(K,2).LE.0.)IFCSIZ(K)=1
      PRINT 961, IC,PURP(K),(FCSP(K,I),I=1,2),(LANDO(I,K),
     1NVARO(I,K),COEFO(I,K),COEFD(I,K),I=1,4)
   65 CONTINUE
  961 FORMAT (I2,A10,2F4.2,4(I1,I2,2F7.4))
    7 IF(IG.EQ.0) GO TO 8
      NGATE = IG
      NGATE1 = NGATE + 1
      READ 976,(IC,IG,(LGATE(J,IG),J =1,2),(GCOUNT(I,IG),I=1,2),
     1((GCNT15(IG,I,K),K=1,4),I=1,2),IG1=1,NGATE)
      PRINT 976,(IC,IG,(LGATE(J,IG),J=1,2),(GCOUNT(I,IG),I=1,2),
     1((GCNT15(IG,I,K),K=1,4),I=1,2),IG=1,NGATE)
  976 FORMAT ( I2, I3, 2I5,10F5.0)
    8 IF(KT.EQ. 0) GO TO 889
      NCOUNT = KT
      DO 85 K=1,NCOUNT
      READ 988, IC,(INDIN(J1),(TARAY(J2,J1),J2=1,3),J1=1,4)
      DO 84 J1 =1,4
      IF (INDIN(J1) .EQ. 0) GO TO 84
      J3 = INDIN(J1)
      DO 83  J2 =1,3
   83 COUNT (J2,J3) = TARAY (J2,J1)
   84 CONTINUE
      PRINT 988, IC,(INDIN(J1),(TARAY(J2,J1),J2=1,3), J1=1,4)
   85 CONTINUE
  988 FORMAT ( I2,I3, 3(F5.0), 3(I5, 3(F5.0)))
  889  IF(NVLF.EQ.0) GO TO 8910
      READ 9889, IC,(VLF(I),I=1,6),(VLFM(I),I=1,7),PVPI
 9889  FORMAT(I2,13F5.2,F5.0)
      PRINT 9889, IC,(VLF(I),I=1,6),(VLFM(I),I=1,7),PVPI
 8910 CONTINUE
      IGT = 0
      IF(NTR.LE.0) GO  TO 8911
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SUBROUTINE  INPT      TRACE                    CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE      4
                READ 989,IC,IGT,ITYP2,ITYP1,((ITR(I,J),I=1,24),J=1,NTR)
          989   FORMAT(I2,I2,I1,1X,I1,24I3/(7X,24I3))
                PRINT 9891,(IC,IGT,ITYP2,ITYP1,(ITR(I,J)
               1,I=1,24),J=1,NTR)
         9891    FORMAT(1X,2I2,I1,1X,I1,24I3)
                DO 896 Z=1,NZONES
                NZ=NZLINKS(Z)
                ITOZ(Z)=0
                ITDZ(Z)=0
                DO 896 J=1,NZ
                DO 896 N=1,NTR
                DO 895 I=1,24
                IF(ITR(I,N).NE.ZLINKS(J,Z)) GO TO 895
                IF(NTR.LE.2) GO TO 893
                IF(N.GT.2) GO TO 894
          892   ITOZ(Z)=I+(N-1)*24
                GO TO 896
          893   IF(N.LE.1) GO TO 892
          894   ITDZ(Z)=I+(N-1)*24
                GO TO 896
          895   CONTINUE
          896   CONTINUE
         8911   CONTINUE
                DO 1102 K=1,4
                DO 1102 I=1,2
                DO 1102 IZ=1,NZONES
         1102   SHFPCT(IZ,I,K)=0.0
                IF(NS.LE.0) GO TO 1200
                IDIV=(NZONES-NEXT1)/18+1
                NP= NS/(IDIV*4)
                DO 1105 IP=1,NP
                DO 1104 K=1,4
                READ 91100, IC,I,AT,(SHFPCT(IZ,I,K),IZ=NEXT1,NZONES)
                PRINT 9110, IC,I,AT,(SHFPCT(IZ,I,K),IZ=NEXT1,NZONES)
         1104   CONTINUE
         1105   CONTINUE
        91100   FORMAT (I2,I1,A4,18F4.0/,(7X,18F4.0))
         9110   FORMAT (1X,I2,I1,A4,18F5.0/,(7X,18F5.0))
         1200   IF(NPLT.EQ.0) GO TO 1205
                READ 91200, IC,XW,YW,SFAC,D1,H1,DH1,CH1,NLIN,LPLTF,XMX,YMX
                PRINT 91200, IC,XW,YW,SFAC,D1,H1,DH1,CH1,NLIN,LPLTF,XMX,YMX
         1205    IF(IOPT(2).EQ.0.OR.INITF.EQ.1) GO TO 1300
                 INITF=1
                 IF(LPLTF.EQ.2) CALL PLOTI(1)
                 IF(LPLTF.NE.2) CALL PLOTI(LPLTF)
         1300   IF (NCLB.EQ.0) GO TO 1400
                READ 91300, IC,FEXGEN,FEXATT,FINGEN,FINATT
        91300   FORMAT (I2,16F4.3)
                PRINT 91300, FEXGEN,FEXATT,FINGEN,FINATT
         1400   IF(NPLU.EQ.0) GO TO 1500
                IP = 1
                IF(TOD.GE.1100.) IP=2
                IF(TOD.GE.1300.) IP=3
                READ 91400, (IC,(PLUALU(I,J,IP),J=1,7),I=1,NPLU)
        91400   FORMAT (I2,7F6.0)
```

```
            PRINT 91401, (IC,(PLUALU(I,J,IP),J=1,7),I=1,NPLU)
      91401  FORMAT(1X,I2,7F6.0)
       1500 IF(NDEMVC.EQ.0) GO TO 1600
            NDEM = 0
            READ 91500, IC,(DVNAME(IDV),IDV=1,10)
      91500 FORMAT(I2,9A8,A6)
            DO 1503 J=1,10
            IF(DVNAME(J).NE.10H          ) NDEM=J
       1503 CONTINUE
            NDV=NDEM
            PRINT 91500, IC,(DVNAME(IDV),IDV=1,10)
       1600 IF(NNAME.EQ.0 .AND. INITA.EQ.1) GO TO 98
            INITA = 1
          * READ NAMELIST CARDS IN AQAM PROGRAM
            CALL AQAMI
      91200 FORMAT (I2,2F5.0,F6.0,4F5.0,2I5,2F5.0)
         98 RETURN
         99 IF(IOPT(2).NE.0) CALL PLOT(0.0,0.0,999)
            STOP
            END
```

```
      SUBROUTINE  INPT      TRACE                           CDC 6700 FTN V3.0-355F OPT=0  79/06/17. 15.49.02.      PAGE      6

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    1  INPT

VARIABLES      SN  TYPE             RELOCATION
 2602  AT           REAL                                  2  BAT       REAL       ARRAY     CHD
    6  CHI          REAL                  PLOT         1275  CI        REAL       ARRAY     INTRST
  361  COEFD        REAL       ARRAY      TRIP          171  COEFO     REAL       ARRAY     TRIP
    0  COUNT        REAL       ARRAY      VOLUME          5  DH1       REAL                 PLOT
 2641  DIST         REAL       ARRAY      LINK            6  DOW       REAL                 COMM
    1  DVNAME       REAL       ARRAY      DEMVAR          3  D1        REAL                 PLOT
 2122  FCS          REAL       ARRAY      ZONES           1  FCSP      REAL       ARRAY     TRIP
   50  FEXATT       REAL       ARRAY      COMM           44  FEXGEN    REAL       ARRAY     COMM
   60  FINATT       REAL       ARRAY      COMM           54  FINGEN    REAL       ARRAY     COMM
 2742  FRAMIL       REAL       ARRAY      ZONES        1403  GCAP      REAL       ARRAY     INTRST
  171  GCNT15       REAL       ARRAY      GATE          145  GCOUNT    REAL       ARRAY     GATE
 5121  HEIGHT       REAL       ARRAY      LINK            4  H1        REAL                 PLOT
    0  I            INTEGER               COMM         2565  IBL       INTEGER
 2547  IC           INTEGER                             537  ICYCL     INTEGER    ARRAY     INTRST
 2577  IDIV         INTEGER                            2604  IDV       INTEGER
 2564  IEXT         INTEGER                              37  IFCSIZ    INTEGER    ARRAY     TRIP
 2551  IG           INTEGER                               0  IGT       INTEGER              TROUT
 2570  IG1          INTEGER                              14  INDIN     INTEGER    ARRAY     / /
 2351  INITA        INTEGER                            2352  INITF     INTEGER
 2350  INITH        INTEGER                              31  IOPT      INTEGER    ARRAY     COMM
 2601  IP           INTEGER                              24  IPFLG     INTEGER    ARRAY     COMM
   65  ITDZ         INTEGER    ARRAY      TROUT          20  ITITLE    INTEGER    ARRAY     / /
   13  ITM          INTEGER               COMM            3  ITOZ      INTEGER    ARRAY     TROUT
  147  ITR          INTEGER    ARRAY      TROUT         431  ITYPC     INTEGER    ARRAY     INTRST
    1  ITYP1        INTEGER               TROUT           2  ITYP2     INTEGER              TROUT
 2562  IZ           INTEGER                            2560  I1        INTEGER
    3  J            INTEGER               COMM         2572  J1        INTEGER
 2573  J2           INTEGER                            2574  J3        INTEGER
    4  K            INTEGER               COMM         2552  KT        INTEGER
 2563  KZ           INTEGER                               2  L         INTEGER              COMM
  552  LANDD        INTEGER    ARRAY      TRIP          456  LANDO     INTEGER    ARRAY     TRIP
 3107  LANDU        INTEGER    ARRAY      ZONES        2261  LCAP      INTEGER    ARRAY     LINK
 3601  LCON         INTEGER    ARRAY      LINK            1  LGATE     INTEGER    ARRAY     GATE
   15  LHEAD        INTEGER    ARRAY      COMM            1  LIN       INTEGER    ARRAY     INTRST
   10  LPLTF        INTEGER               PLOT         2554  L1        INTEGER
 2561  M            INTEGER                            2576  N         INTEGER
   40  NCLB         INTEGER               COMM         2571  NCOUNT    INTEGER
    7  NDAY         INTEGER               CHD          2603  NDEM      INTEGER
   42  NDEMVC       INTEGER               COMM            0  NDV       INTEGER              DEMVAR
 2545  ND1          INTEGER                            2546  ND2       INTEGER
 1357  NEXT         INTEGER               ZONES        3106  NEXT1     INTEGER              ZONES
    0  NGATE        INTEGER               GATE          311  NGATE1    INTEGER              GATE
    0  NINS         INTEGER               INTRST          1  NLANE     INTEGER    ARRAY     LINK
 2347  NLIIN        INTEGER                               7  NLIN      INTEGER              PLOT
    0  NLINK        INTEGER               LINK            6  NMO       INTEGER              CHD
   43  NNAME        INTEGER               COMM         2600  NP        INTEGER
   37  NPLT         INTEGER               COMM           41  NPLU      INTEGER              COMM
    0  NS           INTEGER               SHIFT        5501  NSTOPS    INTEGER    ARRAY     LINK
```

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VARIABLES      SN  TYPE          RELOCATION
 2550  NT          INTEGER                          2553  NTR        INTEGER
    0  NTRIP       INTEGER              TRIP         455  NTRIPC     INTEGER                TRIP
  265  NVARD       INTEGER     ARRAY    TRIP          75  NVARO      INTEGER     ARRAY      TRIP
    0  NVLF        INTEGER              VEHLOD        14  NYEAR      INTEGER                COMM
    5  NYR         INTEGER              CHD         2544  NYR1       INTEGER
 2575  NZ          INTEGER                             1  NZLINKS    INTEGER     ARRAY      ZONES
    0  NZONES      INTEGER              ZONES        311  PD         REAL                   PARKZ
  645  PH          REAL        ARRAY    INTRST        63  PLA        REAL        ARRAY      PARKZ
  313  PLBO        REAL                 PARKZ       2566  PLC        REAL
  376  PLL         REAL        ARRAY    PARKZ        312  PLS        REAL                   PARKZ
  646  PLUALU      REAL        ARRAY    TRIP         314  PNOS       INTEGER     ARRAY      PARKZ
   56  PURP        REAL        ARRAY    TRIP           1  PV         REAL        ARRAY      PARKZ
 2567  PVEH        REAL                               17  PVPI       REAL                   VEHLOD
    0  PZ          INTEGER              PARKZ       2033  QUE        REAL        ARRAY      INTRST
 2555  SCALXY      REAL                                2  SFAC       REAL                   PLOT
    1  SHFPCT      REAL        ARRAY    SHIFT          0  TARAY      REAL        ARRAY      / /
    5  TOD         REAL                 COMM           0  TODE       REAL                   CHD
    1  TODS        REAL                 CHD           10  TOTATT     REAL                   COMM
   12  TOTGEN      REAL                 COMM           7  TP         REAL                   COMM
   64  TP15        REAL                 COMM          11  TTPZ       REAL                   COMM
   13  VAR         REAL        ARRAY    DEMVAR        25  VCR        REAL        ARRAY      GATE
 1364  VEHTYP      REAL        ARRAY    ZONES       3221  VEL        REAL        ARRAY      LINK
    1  VLF         REAL        ARRAY    VEHLOD        10  VLFM       REAL        ARRAY      VEHLOD
 2204  VTYPM       REAL        ARRAY    ZONES        145  VZ         REAL        ARRAY      PARKZ
 2556  XAD         REAL                               11  XMX        REAL                   PLOT
   27  XP          INTEGER              COMM           0  XW         REAL                   PLOT
  361  X1          REAL        ARRAY    LINK        1321  X2         REAL        ARRAY      LINK
 2557  YAD         REAL                               12  YMX        REAL                   PLOT
   30  YP          INTEGER              COMM           1  YW         REAL                   PLOT
  741  Y1          REAL        ARRAY    LINK        1701  Y2         REAL        ARRAY      LINK
    1  Z           INTEGER              COMM        1360  ZAT        REAL        ARRAY      ZONES
 1213  ZATTR       REAL        ARRAY    ZONES       1275  ZOENR      REAL        ARRAY      ZONES
 1362  ZOT         REAL        ARRAY    ZONES         63  ZLINKS     INTEGER     ARRAY      ZONES
 2040  ZNAME       INTEGER     ARRAY    ZONES        227  ZV         REAL        ARRAY      PARKZ

FILE NAMES     MODE
     INPUT     FMT                 OUTPUT      FMT

EXTERNALS      TYPE     ARGS
     ABORT               0                           AMAX1     REAL       2
     AND       NO TYPE   2                           AQAMI                0
     COORXY              0                           EOF       REAL       1
     LETTER              2                           MASK      NO TYPE    1
     PLOT                3                           PLOT1                1

STATEMENT LABELS
    0  1           INACTIVE           0  2        INACTIVE             442  3
  605  4                            743  5                               0  6          INACTIVE
 1272  7                           1405  8                               0  23         INACTIVE
    0  25                             0  49                           1024  56
 1040  57                             0  58                           1074  59
    0  65                             0  83                           1457  84
    0  85                          2447  96       FMT                 2304  98
 2305  99                           667  474                           675  475
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      SUBROUTINE INPT      TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE      8

  STATEMENT LABELS
    1505  889                              1641  892                           1646  893
    1651  894                              1656  895                           1661  896
    2353  910       FMT                    2355  911       FMT                 2374  912       FMT
    2361  913       FMT                    2401  922       FMT                 2407  923       FMT
    2421  933       FMT                    2425  944       FMT                 2431  949       FMT
    2435  956       FMT                    2442  957       FMT                 2453  961       FMT
    2457  976       FMT                    2462  988       FMT                 2471  989       FMT
       0  1102                                0  1104                             0  1105
    2005  1200                             2076  1205                          2117  1300
    2152  1400                             2236  1500                             0  1503
    2274  1600                             1536  8910                          1672  8911
    2504  9110      FMT                    2415  9330      FMT                 2466  9889      FMT
    2475  9891      FMT                    2500  91100     FMT                 2523  91200     FMT
    2510  91300     FMT                    2513  91400     FMT                 2515  91401     FMT
    2520  91500     FMT

  COMMON BLOCKS   LENGTH
          COMM        53
          CHD          8
          LINK      3121
          INTRST    1331
          ZONES     1657
          DEMVAR     511
          TRIP       569
          GATE       202
          VOLUME    4320
          VEHLOD      16
          TROUT      199
          SHIFT      401
          PARKZ      304
          PLOT        11
          / /         28

  STATISTICS
    PROGRAM LENGTH   2613B      1419
     COMMON LENGTH   30637B    12703
      BLANK COMMON     34B        28
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      SUBROUTINE INSEC
*  THIS PROGRAM COMPUTES DELAY AND QUEUE LENGTH AT AN INTERSECTION.
*  IT IS BASED ON GORDON NEWLLS INTERSECTION MODEL.  THREE TYPES OF
*  SIGNALS MAY BE SPECIFIED 1)FIXED TIME 2)ACTUATED WITH LEFT THURN
*  PHASES 3)ACTUATED WITH SEPERATE PHASES FOR EACH APPROACH.  THIS MODEL
*  WILL HANDLE OVER CAPACITY INTERSECTIONS, AN EXTENSION TO NEWELLS
*  MODEL, BY ASSUMING CAPACITY FLOW WHEN THE QUEUE LENGTH AT THE END
*  OF GREEN EQUALS HALF THE ARRIVALS ON RED PLUS THE ARRIVALS ON GREEN
*  CYCLE AND PHASE
*  LENGTHS ARE COMPUTED BASED ON F.V.WEBSTER "TRAFFIC SIGNAL SETTINGS"
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
     2,NDEMVC,NPLOT,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /INTRST/NI, LIN(70,4),ITYPC(70),ICYCL(70), PH(70,4), CI(70)
     1 , GCAP(70,4),QUE(70,4)
      COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
     1ZGENR (50), NEXT, ZAT(2), ZGT(2), VEHTYP(6,50), ZNAME(50),FCS(50)
     2,VTYPM(7,50),FRAMIL(50,2),NEXT1,LANDU(50)
      INTEGER ZLINKS,ZNAME
      COMMON /DEMVAR/ NDV,DVNAME(10),VAR(10,50)
      COMMON / GATE/ NGATE, LGATE(2,10), VCR(10, 2,4),GCOUNT(2,10),
     1GCNT15(10,2,4),NGATE1
      COMMON/VOLUME/ COUNT(16,240)
      COMMON /PARKZ/ PZ,       PV(50), PLA(50), VZ(50), ZV(50)
      INTEGER PZ
      REAL MINR
      COMMON /RESLT/ TT(240,3), DELA(240,3), PRT(50), QUEUE(240)
      COMMON                  PT(4,3),VOL(4,3),Y(4,3),CAP(4,3),YT(4)
     1,DELAI(70,6),QQ(4,3)
      DIMENSION NPHASE(9)
      DATA NPHASE/ 10HNORTH-APPR, 10H EAST-APPR, 10HSOUTH-APPR,
     1 10H WEST-APPR, 10HN-APP-LEFT, 10HS-APP-LEFT, 10HE-APP-LEFT,
     2 10HW-APP-LEFT, 10H          /
*  FOR EACH SIGNAL PHASE DETERMINE A PHASE LENTH
 1    NP = 0
      MINR = 1.0
      SY = 0
*   INITIALIZE VOLUMES ON EACH APPROACH
      DO 15 J=1,4
      VOL(J,1) = 0.0
      L = LIN(I,J)
      IF(L .GT. 0) VOL(J,1)=(COUNT(3,L)+COUNT(2,L)+COUNT(1,L))*3600./TP
      VOL(J,2) = VOL(J,3) = 0.0
      CAP(J,2)=CAP(J,3)=DELAI(I,J)=DELAI(I,J+4)=QQ(J)=QQ(J,2)=QQ(J,3)=0.
 15   CONTINUE
*  FIRST DETERMINE THE VOLUME AND CAPACITY OF EACH APPROACH.
 2    J1 = 1
*   J IS INDEX OF APPROACH DIRECTION
*  J2 IS INEEX OF PHASE CONTROLLING THIS APPROACH
      DO 25 J = 1,4
      CAP(J,1) = 0.5
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```
      L = LIN(I,J)
      IF(L .EQ. 0) GO TO 24
*  SET J1,AN INDEX TO TEST WHETHER THERE IS  MORE THAN ONE PHASE (OR
*  SUB-PHASE CONTROLING THE N-S OR E-W APPROACHES
      J2 = J1
*   SET INDEX J3 TO IDENTIFY OPPOSING TRAFFIC
*    IE OPPOSING APPROACH
      J3 = J1
      IF(J .LE. 2) J3 = J+2
      IF(ITYPC(I) .EQ. 3) GO TO 21
      IF(ITYPC(I) .EQ. 4 .AND. J1 .EQ. 2) GO TO 21
      IF(ITYPC(I) .EQ. 5 .AND. J1 .EQ. 1) GO TO 21
      CAP (J,1) = GCAP(I,J2)
      IF (CAP(J,1) .EQ. 0.0) CAP(J,1) = NLANE (L)*1200.
      IF(VOL(J,1) .LE. 0. ) GO TO 24
*  CONTROL IS BY A TWO PHASE SIGNAL WITH 2 POSSIBLE MINOR MOVEMENTS
      IF( PH(I,J2+2) .NE. 0.) GO TO 22
      IF(VOL(J3) .EQ. 0.0) GO TO 225
*  MODIFY THE CAPACITIES DUE TO LEFT TURNING VEHICLES (SEE TABLE6.5 HCM)
  200 PCNTURN = AMIN1(COUNT(3,L)/VOL(J,1)*3600./TP, 0.3)
      BASEPNT = 0.1
      DIF = 0.5
      BPVAL = 0.0
      IF(NLANE(L) .GT. 2) GO TO 208
      IF(NLANE(L) .EQ. 2) GO TO 205
      IF(PCNTURN  .LT. 0.2) GO TO 201
      BASEPNT = 0.2
      BPVAL = 0.15
      GO TO 208
  201  IF(PCNTURN .LT. 0.15) GO TO 203
      BASEPNT = 0.15
      BPVAL = 0.1
      GO TO 207
  203 DIF = 2.0
      IF(PCNTURN .LT. 0.1) DIF = 3.0
      GO TO 208
  205  IF(PCNTURN .LT. 0.2) GO TO 207
      BASEPNT = 0.2
      BPVAL = 0.1
      GO TO 208
  207 DIF = 1.0
  208 FACL = DIF*(BASEPNT-PCNTURN)-BPVAL
      GO TO 23
*  CAPACITY IS IDENTICAL FOR ALL THREE TURNING MOVEMENTS OF APPROACH
  21  J2 = J
      CAP(J,1) = GCAP(I,J2)
      IF(CAP(J,1) .EQ. 0.0) CAP(J,1) = NLANE(L)*1200.
      IF(VOL(J,1) .LE. 0.) GO TO 24
      GO TO 225
  22  VOL (J) =(COUNT(2,L)+ COUNT(1,L) ) *3600./TP
      VOL( J, 3) = COUNT(3, L) = 3600./TP
*
*  ASSUME A LEFT TURN CHANNEL THAT STORES ALL THE LEFT TURNING
*  VEHICLES UNTIL THE LEFT TURN PHASE BEGINS.
      CAP(J,1) = CAP(J,1) *(1.0 +0.3/ NLANE (L))
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          CAP(J,3) = GCAP(I,J1+2)
          IF(CAP(J,3) .LE. 0.) CAP(J,3) = 1200.
          Y(J,3) = VOL(J,3)/ CAP(J,3)
     225  FACL = 0.3/NLANE(L)
*    MODIFY THE CAPACITIES DUE TO VARIATIONS IN RIGHT TURNING VEHICLES
      23  FACR = 2.0
          IF(VOL(J,1) .LE. 0.0) GO TO 24
          PCNTURN = AMIN1(COUNT(2,L)/VOL(J,1) * 3600./TP, 0.3)
          IF(PCNTURN .GT. 0.1) FACR = 1.0
          IF(NLANE(L) .EQ. 2) FACR = 0.5
          IF(NLANE(L) .GT. 2) FACR = 0.25
          FACR = (0.1-PCNTURN)*FACR
          IF(NLANE(L) .EQ. 1 .AND. PCNTURN .GT. 0.2) FACR = FACR-(PCNTURN
         1-0.2)/2.0
          CAP(J,1) = CAP(J,1) *(1.0+FACR+FACL)
*    COMPUTE WEBSTERS HIGHEST RATIO OF FLOW TO SATURATION FLOW FOR EACH
*    PHASE
      24  Y(J) = 0.0
          IF ( CAP(J,1).GT.0.0 ) Y(J) = VOL(J,1)/ CAP(J,1)
      25  J1 = 3-J1
*
*    CALCULATE THE MAXIMUM Y FOR EACH PHASE
          YT(3) = Y(3,1)
          YT(1) = Y(1,1)
          IF(ITYPC(I) .EQ. 3 .OR. ITYPC(I) .EQ. 5) GO TO 26
          YT(1)= AMAX1 (Y(1,1), Y(3,1))
          YT(3) = 0.0
          IF ( PH(I,3) .NE. 0.) YT(3)=AMAX1 ( Y(3,3), Y(1,3))
      26  YT(4) = Y(4,1)
          YT(2) = Y(2,1)
          IF(ITYPC(I) .EQ. 3 .OR. ITYPC(I) .EQ. 4) GO TO 27
          YT(2)= AMAX1 (Y(2,1), Y(4,1))
          YT(4) = 0.0
          IF ( PH(I,4) .NE. 0.0)  YT(4)= AMAX1( Y(2,3), Y(4,3))
      27  DO 28 J=1,4
      28  PT(J,1) = PH(I,J)
          COT = ICYCL(I)
          IF (ITYPC(I) .EQ. 1) GO TO 40
*    CALCULATE THE CONTROLING  Y RATIO TO PHASE TIME RATIO
          DO 29 J =1,4
          IF (PH(I,J).EQ.0) GO TO 29
          IF(YT(J) .LE. 0.0) GO TO 29
          SY = YT(J) + SY
          MINR =AMIN1( MINR, YT(J)/PH(I,J))
          NP= NP + 1
      29  CONTINUE
*    CALCULATE A CYCLE TIME CO
          CO = 0.0
          DO 31 J = 1,4
*         PT (J) =YT(J)/MINR
      31  CO = CO + YT(J)/MINR
*    CALCULATE WEBSTERS OPTIMUM CYCLE TIME
          COT = ICYCL(I)
          IF(SY .LT. 1.0) COT =(1.5*CI(I)*NP + 5.0)/ (1.0-SY)
          IF (CO .GT. COT) GO TO34
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      IF(CO .GT. ICYCL(I)) GO TO 33
      IF(COT .GT. ICYCL(I)) GO TO 33
      GO TO 343
 33   CO =ICYCL(I)
      GO TO 35
 34   IF ( COT.GT.ICYCL(I)) GO TO 33
 343  CO = COT
 35   COT = CO
      J3 = 0
 353  J3 = J3 + 1
      SPT = 0.0
      SPH = 0.0
*   FIND THE PHASE TIMES FOR THIS CYCLE LENGTH
      DO 37 J=1,4
      IF(PH(I,J) .LE. 0.0) GO TO 37
      IF(SY.GT.0.0) PT(J,1) = YT(J)/SY*COT
      IF(PT(J,1) .GT. PH(I,J)) GO TO 36
*  PHASE SKIPPABILITY IS ASSUMED FOR CONTROLLER.
      IF(PT(J,1) .LE. 0.0) GO TO 37
      SPH = SPH + PH(I,J)
      PT (J) = PH(I,J)
      GO TO 37
 36   SPT = PT(J,1) + SPT
 37   CONTINUE
      IF(SPT + SPH .LE. COT) GO TO 40
      COT = SPT + SPH
      IF (J3 .LE. 1) GO TO 353
      IF(COT .LE. ICYCL(I)) GO TO 40
*  REDISTRIBUTE TIME BEYOND PHASE TIME.
      RDIS = COT - ICYCL (I)
      COT = ICYCL(I)
      DO 39 J=1,4
*  PHASE MIGHT BE 0.0 , EQUAL OR GREATER THAN PH(I,J)
      IF(PT(J,1) .LE. PH(I,J)) GO TO 39
      PTJ = PT(J,1)
      PT(J,1) = PT(J,1) *(1.0-RDIS/SPT)
      IF(PT(J,1) .LT. PH(I,J)) PT(J,1) = PH(I,J)
      SPT = SPT - PTJ
      RDIS=RDIS-PTJ+PT(J,1)
 39   CONTINUE
*
*  COMPUTE DELAY , QUEUE LENGTH, NSTOPS
*   SET J1, A PHASE INSEX, J1 = 1,2,1,2 WHEN J= 1,2,3,4 AND ITYPC = 1 ,2
 40   J1 = 1
      DO 63 J=1,4
      NS = 0
      W1 = W2 = W3 = 0.0
      Q1 = 0.0
      L = LIN(I,J)
      IF(L.LE.0) GO TO 63
      DO 61 K=1,3
      IF(K .EQ. 2) GO TO 60
*  DETERMINE THE PHASE INDEX J2 OF THIS APPROACH AND TURNING MOVEMENT.
      IF(ITYPC(I) .LT. 3) GO TO 43
      IF(ITYPC(I) .EQ. 4 .AND. J1 .EQ. 1) GO TO 43
```

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          IF(ITYPC(I) .EQ. 5 .AND. J1 .EQ. 2) GO TO 43
          IF(K .EQ. 3) GO TO 60
          J2 = J
          GO TO 44
   43     J2 = J1 + K-1
   44     IF(PT(J2,1) .EQ. 0.0 .AND. K .EQ. 3) GO TO 60
*  MODIFY CAPACITY PER HOUR OF GREEN TO CAPACITY PER HOUR
          CAP(J,K) = CAP(J,K)*(PT(J2,1)-CI(I) / 2.0)/COT
          CAP(J,K) = AMAX1(0.0, CAP(J,K))
*  TEST THAT THE VOLUME DOES NOT EQUAL CAPACITY, CAPACITY IS DEVALUED
          GREENQ = 0.0
          IF(PT(J2,1) .GT. 0.0) GREENQ = 3600./(COT + PT(J2,1))
          IF(VOL(J,K) + GREENQ      .GE.      CAP(J,K)) GO TO 50
*  COMPUTE QUE LENGTH AT END OF GREEN
          COTMPT = COT - PT(J2,1)
          W1 = COTMPT * COTMPT /(2.0*COT*(1.0-Y(J,K)))
          QO = VOL(J,K)/(2.0*(CAP(J,K) - VOL(J,K)))
          IF(K .GT. 1) GO TO 54
*  W3 IS THE DELAY DUE TO RESIDUAL QUEUE FROM PREVIOUS TIME PERIOD
          IF(VOL(J,1) .LE. 0.0) GO TO 52
          W3 = QUE(I,J)*QUE(I,J)/((CAP(J,1)-VOL(J,1))*2.0*VOL(J,1)) *3600.
          GO TO 52
   50     IF(GREENQ .GT. 1.0)
         1 QO =  CAP(J,K)*(GREENQ*2.0 - 1.0 + AMIN1(VOL(J,K)-CAP(J,K),0.0))
         2 /(2.0*GREENQ*(GREENQ-1.0))- 0.5
          W1 = (COT - PT(J2,1))/2.0
          IF(VOL(J,K).GT.CAP(J,K))
         1Q1 = AMAX1 (0.0, (VOL(J,K)- CAP(J,K))*TP/3600.
         1 + AMAX1(0.0,QUE(I,J) - QO) )
          IF(K .GT. 1) Q1 = AMAX1(0.0,(VOL(J,K)-CAP(J,K))*TP/3600.)
          IF(Q1 .GT. 0.0) W3 = TP
          IF(CAP(J,K) .GT. 0.0) W3 = Q1*1800./CAP(J,K)
   52     QO = QO + Q1
   54     W2 = QO*1800.
          IF(CAP(J,K) .NE. 0.) W2 = QO*3600./CAP(J,K)
          NS = (1.0-PT(J2,1)/COT)/(1.0-Y(J,K))*VOL(J,K)*TP/3600. + NS
*  COMPUTE INVERTED VOLUME TO CAPACITY RATIOS AT EACH GATE
          DO 56  IG = 1,NGATE
          K1 = 1
          IF ( L .EQ. LGATE(1,IG))GO TO 57
          K1 = 2
          IF ( LCON (L, K) .EQ. LGATE(2,IG)) GO TO 57
   56     CONTINUE
          GO TO 60
   57     VCR (IG,K1, K) = 0.0
          IF(VOL(J,1) .NE. 0.0) VCR(IG,K1,K) = CAP(J,1)/VOL(J,1)
          IF (VOL(J, K) .NE. 0.0) VCR(IG,K1,K) = CAP(J,K)/ VOL(J,K)
   60     DELA(L,K) = W1 + W2 + W3
          QQ(J,K) = QO
          IF (K.GT. 1) GO TO 61
*   COMPUTE THE AVERAGE QUEUE LENGTH FOR A SIGNAL CYCLE.
*  QUEUE AT END OF GREEN + AVERAGE QUEUE DURING RED PHASE
          QUEUE(L) = QO + W1*VOL(J,1)/3600.
          QO = 0.0
   61     CONTINUE
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      QUEUE(L) = QUEUE(L) + QO
      NSTOPS(L) = NS
*     MOVE LEFT TURNING Q AND VOL FOR PRINTING PURPOSES
      QQ(J,2) = QQ(J,3)
      VOL(J,2) = VOL(J,3)
      CAP(J,2) = CAP(J,3)
      Y(J,2) = Y(J,3)
      QUE(I,J) = QQ(J,1) + QQ(J,3)
      DELAI(I,J) = DELA(L,1)
      DELAI(I,J+4) = DELA(L,3)
63    J1 = 3-J1
      Y(9) = CAP(9)= VOL(9) = QQ(9) = 0.0
      PRINT 9631, I,(J,J=1,4)
9631  FORMAT (13HOINTERSECTION I5/ 4(23X,5HPHASE,I2))
      PRINT 9632, (PT(J,1),J=1,4)
9632  FORMAT (10H TIME(SEC),4(13X,F4.0,13X))
      PRINT 9633, (YT(J),J=1,4)
9633   FORMAT ( 7H V/GCAP,4(16X,F7.5,7X))
      IF(ITYPC(I) .GT. 2) GO TO 6331
      I2 = 3$ I4 = 4$ I5 = 5$ I6 = 6$ I7 = 7$ I8 = 8
      I9 = 7$ I10 = 6
      GO TO 6335
6331  IF(ITYPC(I) .GT. 3) GO TO 6332
      I2 = I4 = I6 = I8 = 9$ I5 = 3$ I7 = 4
      I9 = 9$ I10 = 4
      GO TO 6335
6332  IF(ITYPC(I) .GT. 4) GO TO 6333
      I2 = 3$ I4 = I8 = 9$ I5 = 5$ I6 = 6$ I7 = 4
      I9 = 7 $ I10 = 4
      GO TO 6335
6333  CONTINUE
      I2 = I6 = 9$ I4 = 4$ I5 = 3$ I7 = 7$ I8 = 6
      I9 = 9 $ I10 = 6
6335  PRINT 96335, NPHASE(1),NPHASE(I2),NPHASE(2),NPHASE(I4), NPHASE(I5)
     1, NPHASE(I6), NPHASE(I7), NPHASE(I8)
96335 FORMAT (6X, 4(5X,A10,1XA10,4X))
      PRINT 9634, (DELAI(I,J),DELAI(I,J+2),J=1,2),DELAI(I,I5),DELAI(I,I9
     1), DELAI(I,I10),DELAI(I,I8)
9634  FORMAT(11H DELAY(SEC),4(2F10.0,10X))
      PRINT 9635, (QQ(J,1),QQ(J+2,1),J=1,2),QQ(I5),QQ(I9), QQ(I10),QQ(
     1I8)
9635  FORMAT(11H QUEUE(VEH),4(2F10.0,10X))
      PRINT 9636, (VOL(J,1),VOL(J+2,1),J=1,2),VOL(I5),VOL(I9),VOL(I10),
     1VOL(I8)
9636  FORMAT(12H VOLUME(VEH),4(F9.0,F10.0,11X))
      PRINT 9637, (CAP(J,1),CAP(J+2,1),J=1,2),CAP(I5),CAP(I9),CAP(I10),
     1  CAP(I8)
9637  FORMAT(14H CAPACITY(VEH),4(F7.0,F10.0,13X))
      PRINT 9638, (Y(J,1),Y(J+2,1),J=1,2),Y(I5),Y(I9),Y(I10),Y(I8)
9638  FORMAT (7H V/GCAP 4(4X,2F10.5,6X))
      GO TO 90
90    CONTINUE
      RETURN
      END
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        SUBROUTINE  INSEC      TRACE                             CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE      7

        SYMBOLIC REFERENCE MAP

ENTRY POINTS
    1  INSEC

VARIABLES     SN  TYPE            RELOCATION
 2453  BASEPNT    REAL                                 2455  BPVAL     REAL
   44  CAP        REAL      ARRAY    / /               1275  CI        REAL      ARRAY    INTRST
 2461  CO         REAL                                 2460  COT       REAL
 2474  COTMPT     REAL                                    0  COUNT     REAL      ARRAY    VOLUME
 1320  DELA       REAL      ARRAY    RESLT               64  DELAI     REAL      ARRAY    / /
 2454  DIF        REAL                                 2641  DIST      REAL      ARRAY    LINK
    6  DOW        REAL               COMM                 1  DVNAME    REAL      ARRAY    DEMVAR
 2456  FACL       REAL                                 2457  FACR      REAL
 2122  FCS        REAL      ARRAY    ZONES               50  FEXAT     REAL      ARRAY    COMM
   44  FEXGEN     REAL      ARRAY    COMM                60  FINATT    REAL      ARRAY    COMM
   54  FINGEN     REAL      ARRAY    COMM              2742  FRAMIL    REAL      ARRAY    ZONES
 1403  GCAP       REAL      ARRAY    INTRST             171  GCNT15    REAL      ARRAY    GATE
  145  GCOUNT     REAL      ARRAY    GATE              2473  GREENQ    REAL
 5121  HEIGHT     REAL      ARRAY    LINK                 0  I         INTEGER            COMM
  537  ICYCL      INTEGER   ARRAY    INTRST            2476  IG        INTEGER
   31  IOPT       INTEGER   ARRAY    COMM                24  IPFLG     INTEGER   ARRAY    COMM
   13  ITM        INTEGER            COMM               431  ITYPC     INTEGER   ARRAY    INTRST
 2507  I10        INTEGER                              2500  I2        INTEGER
 2501  I4         INTEGER                              2502  I5        INTEGER
 2503  I6         INTEGER                              2504  I7        INTEGER
 2505  I8         INTEGER                              2506  I9        INTEGER
    3  J          INTEGER            COMM              2447  J1        INTEGER
 2450  J2         INTEGER                              2451  J3        INTEGER
    4  K          INTEGER            COMM              2477  K1        INTEGER
    2  L          INTEGER            COMM              3107  LANDU     INTEGER   ARRAY    ZONES
 2261  LCAP       INTEGER   ARRAY    LINK              3601  LCON      INTEGER   ARRAY    LINK
    1  LGATE      INTEGER   ARRAY    GATE                15  LHEAD     INTEGER   ARRAY    COMM
    1  LIN        INTEGER   ARRAY    INTRST            2444  MINR      REAL
   40  NCLB       INTEGER            COMM                42  NDEMVC    INTEGER            COMM
    0  NDV        INTEGER            DEMVAR            1357  NEXT      INTEGER            ZONES
 3106  NEXT1      INTEGER            ZONES                0  NGATE     INTEGER            GATE
  311  NGATE1     INTEGER            GATE                 0  NI        INTEGER            INTRST
    1  NLANE      INTEGER   ARRAY    LINK                 0  NLINK     INTEGER            LINK
 2445  NP         INTEGER                              2510  NPHASE    INTEGER   ARRAY
   43  NPLOT      INTEGER            COMM                37  NPLT      INTEGER            COMM
   41  NPLU       INTEGER            COMM              2466  NS        INTEGER
 5501  NSTOPS     INTEGER   ARRAY    LINK                14  NYEAR     INTEGER            COMM
    1  NZLINKS    INTEGER   ARRAY    ZONES                0  NZONES    INTEGER            ZONES
 2452  PCNTURN    REAL                                  645  PH        REAL      ARRAY    INTRST
   63  PLA        REAL      ARRAY    PARKZ             2640  PRT       REAL      ARRAY    RESLT
    0  PT         REAL      ARRAY    / /               2465  PTJ       REAL
    1  PV         REAL      ARRAY    PARKZ                0  PZ        INTEGER            PARKZ
 2475  QO         REAL                                 1144  QQ        REAL      ARRAY    / /
 2033  QUE        REAL      ARRAY    INTRST            2722  QUEUE     REAL      ARRAY    RESLT
 2472  Q1         REAL                                 2464  RDIS      REAL
 2463  SPH        REAL                                 2462  SPT       REAL
 2446  SY         REAL                                    5  TOD       REAL               COMM
   10  TOTATT     REAL               COMM                12  TOTGEN    REAL               COMM
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      SUBROUTINE  INSEC       TRACE                                 CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE      8

VARIABLES      SN  TYPE               RELOCATION
      7  TP        REAL                   COMM                 64  TP15      REAL                  COMM
      0  TT        REAL        ARRAY      RESLT                11  TTPZ      REAL                  COMM
     13  VAR       REAL        ARRAY      DEMVAR               25  VCR       REAL        ARRAY     GATE
   1364  VEHTYP    REAL        ARRAY      ZONES              3221  VEL       REAL        ARRAY     LINK
     14  VOL       REAL        ARRAY      / /                2204  VTYPM     REAL        ARRAY     ZONES
    145  VZ        REAL        ARRAY      PARKZ              2467  W1        REAL
   2470  W2        REAL                                      2471  W3        REAL
     27  XP        INTEGER                COMM                361  X1        REAL        ARRAY     LINK
   1321  X2        REAL        ARRAY      LINK                 30  Y         REAL        ARRAY     / /
     30  YP        INTEGER                COMM                 60  YT        REAL        ARRAY     / /
    741  Y1        REAL        ARRAY      LINK               1701  Y2        REAL        ARRAY     LINK
      1  Z         INTEGER                COMM               1360  ZAT       REAL        ARRAY     ZONES
   1213  ZATTR     REAL        ARRAY      ZONES              1275  ZGENR     REAL        ARRAY     ZONES
   1362  ZGT       REAL        ARRAY      ZONES                63  ZLINKS    INTEGER     ARRAY     ZONES
   2040  ZNAME     INTEGER     ARRAY      ZONES               227  ZV        REAL        ARRAY     PARKZ

FILE NAMES         MODE
         OUTPUT    FMT

EXTERNALS          TYPE   ARGS
         AMAX1     REAL   2                                       AMIN1     REAL        2

STATEMENT LABELS
      0  1            INACTIVE               0  2            INACTIVE                0  15
    271  21                                316  22                                 376  23
    463  24                                  0  25                                 544  26
    604  27                                  0  28                                 656  29
      0  31                                725  33                                 730  34
    737  35                               1014  36                                1017  37
   1115  39                               1120  40                                1171  43
   1174  44                               1341  50                                1500  52
   1502  54                                  0  56                                1570  57
   1641  60                               1667  61                                1746  63
      0  90           INACTIVE               0  200          INACTIVE              234  201
    243  203                               253  205                                262  207
    264  206                               372  225                                735  343
    742  353                              2022  6331                              2036  6332
   2053  6333                             2063  6335                              2355  9631   FMT
   2362  9632   FMT                       2366  9633   FMT                        2376  9634   FMT
   2402  9635   FMT                       2406  9636   FMT                        2413  9637   FMT
   2420  9638   FMT                       2372  96335  FMT

COMMON BLOCKS      LENGTH
         COMM          53
         LINK        3121
         INTRST      1331
         ZONES       1657
         DEMVAR       511
         GATE         202
         VOLUME      4320
         PARKZ        201
         RESLT       1730
         / /          624
```

```
STATISTICS
  PROGRAM LENGTH    2521B    1361
   COMMON LENGTH   31506B   13126
    BLANK COMMON    1160B     624
```

```
      SUBROUTINE INSECU
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
     2,NDEMVC,NNAME,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /INTRST/NI, LIN(70,4),ITYPC(70),ICYCL(70), PH(70,4), CI(70)
     1 , GCAP(70,4),QUE(70,4)
      COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
     1ZGENR (50), NEXT, ZAT(2), ZGT(2), VEHTYP(6,50), ZNAME(50),FCS(50)
     2,VTYPM(7,50),FRAMIL(50,2),NEXT1,LANDU(50)
      INTEGER ZLINKS,ZNAME
      COMMON /DEMVAR/ NDV,DVNAME(10),VAR(10,50)
      COMMON / GATE/ NGATE, LGATE(2,10), VCR(10, 2,4),GCOUNT(2,10),
     1GCNT15(10,2,4),NGATE1
      COMMON /VOLUME/ COUNT(18,240)
      COMMON /PARKZ/ PZ,      PV(50), PLA(50), VZ(50), ZV(50)
      INTEGER PZ
      COMMON /RESLT/ TT(240,3), DELA(240,3), PRT(50), QUEUE(240)
      COMMON               PT(4,3),VOL(4,3),Y(4,3),CAP(4,3),YT(4)
     1,DELA1(70,4)
      DIMENSION W(2),V(2)
      INTEGER W
*
*  UNSIGNALIZED INTERSECTIONS ARE HANDLED IN THIS SECTION
*  NOTE THAT THE HCM RECOMMENDS ,IN THE ABSENSE OF A BETTER ALTERNATIVE,
*  TREATING AN UNCONTROLLED INTERSECTION AS A TYPE 2 SIGNALIZED INTERSEC
*  TION.  ACTUALLY INSECU IS MOST ACCURATE IN TREATING A 4 WAY STOP
*  BUT CAN USUALLY BE USED FOR ANY UNSIGNALIZED INTERSECTION.
      SLANE = 0.0
      SVOL = ABSV = 0.0
      SCAP = 0.0
      I4 = 0
      J1 = 1
      W(1) = W(2) = 0
      V(1) = V(2) = 0.0
      J2 = 1
      DO 73 J = 1,4
*  SUM THE VOLUME AND VOLUME DIFFERENCE FOR VEHICLES ON N-S AND E-W APPR
      L = LIN (I,J)
      VOL(J,1) = 0.0
      IF (L .LE. 0) GO TO 73
      DELA(L,1) = 0.0
      I4 = I4 + 1
      VOL(J,1) =(COUNT(1,L) + COUNT(2,L) + COUNT(3,L) ) *3600./TP
      IF(VOL(J,1) .GT. VOL(J1)) J1 = J
      IF(ITYPC(I) .GE. -1) GO TO 715
      SVOL = SVOL + VOL(J,1)
      ABSV = VOL(J,1) - ABSV
      IF ( GCAP(I,J) .GT.0) GO TO 727
      IF ( NLANE(L) - 1) 71, 723, 725
   71 STOP 1
  715 V(J2)= AMAX1(VOL(J,1),V(J2))
```

```
      W(J2) = MAXO(NLANE(L),W(J2))
      IF(GCAP(I,J) .LE. 0.0) GCAP(I,J) = 1800.*NLANE(L)
      GO TO 729
  723 GCAP( I,J) = 475.
      GO TO 727
  725 GCAP(I,J) = 450.*NLANE(L)
*  SUM THE CAPACITIES FOR ALL APPROACH LEGS
  727 SCAP = SCAP + GCAP(I, J)
  729 SLANE = SLANE + NLANE(L)
  73  J2 = 3-J2
      J1 = MOD(J1 , 2)
      IF(ITYPC(I) .GE. -1) GO TO 735
      ABSV = ABS(ABSV)
*  COMPUTE A MODIFIED INTERSECTION CAPACITY BASED ON VOLUME SPLIT
*  ,  FROM HCM TABLE 6.8 )
      IF(SVOL .GT. 0.0)
     1SNCAP = SCAP * AMAX1(1.0 - ABSV/SVOL/1.9, .816)
      IF (I4 .LT. 4) SNCAP = SCAP
      GO TO 738
  735 IF(V(1) .LT. 1.0 .OR. V(2) .LT. 1.0) GO TO 738
      R = V(1)/V(2)*W(2)/W(1)
      SNCAP = 1800.*(W(1)*R+W(2))/(R+1.0)
      SVOL = V(1) + V(2)
*  COULD INCLUDE MODIFICATION TO GCAP AT A 2 WAY STOP BASED ON GAP ACCEP
  738 CONTINUE
*  COMPUTE NEW CAPACITIES FOR EACH APPROACH
      IG = 0
      IG1 = 0
      DO 77 J = 1,4
      L = LIN(I,J)
      DELAI(I,J) = 0.0
      QO = 0.0
      IF(L .LE. 0) GO TO 767
      NSTOPS(L) = 0
      IF(SVOL .LE. 0.) GO TO 76
      CAP(J,1) = VOL(J,1)*SNCAP/SVOL
*  TEST IF OVER CAPACITY DEMAND
      QO = AMIN1(VOL(J,1), (VOL(J,1) - CAP(J,1))*TP/3600.+QUE(I,J)+5.0)
      IF(VOL(J,1) .LT. CAP(J,1)) QO = AMIN1(5.0,1.0/(SNCAP/SVOL-1.0))
*  COMPUTE THE NEW CAPACITY TO VOLUME RATIO AT EACH GATE
      IF(IG .GT. 0) GO TO 742
  741 IG = IG + 1
  742  IF (IG.GT. NGATE) GO TO 749
      IF (L .NE. LGATE(1,IG)) GO TO 746
      IF(VOL(J,1) .EQ. 0.)GO TO 749
      DO 744 K=1,3
      VCR(IG , 1, K) = CAP(J,1) / VOL(J,1)
*     IF(VOL(J,K) .NE. 0) VCR(IG,1,K) = CAP(J,K)/VOL(J,K)
  744 CONTINUE
      GO TO 749
  746 DO 747 K=1,3
      IF(LCON(L,K) .NE. LGATE(2,IG)) GO TO 747
      IF(VOL(J,1) .NE. 0.0)VCR(IG,2,K) = CAP(J,1)/VOL(J,1)
      GO TO 749
  747 CONTINUE
```

```
      748  IF(IG1 .EQ. 0) GO TO 741
      749  IG1 = IG
     *  DELAY ON EACH APPROACH
       75  CONTINUE
           PNS = SVOL/SNCAP
           IF(VOL(J,1) .LE. 0.0) GO TO 76
     *   COMPUTE THE PERCENTAGE STOPS
           IF(ITYPC(I) .EQ. -4) PNS = 1.0
           IF(ITYPC(I) .LE. -1 .AND. MOD(J,2) .NE. J1) PNS = 1.0
     *  COMPUTE DELAY BASED ON INVERSE OF CAPACITY.  MAKE THEORETICAL MAXIMUM
     *  OF CAPACITY 2*GCAP(I,J)
           DELA (L,1) = NLANE(L)/(AMIN1(2.0, SNCAP/SVOL) *GCAP(I,J))*3600.*
          1 (PNS + QO)
           NSTOPS(L) = PNS*VOL(J,1)*TP/3600.
     *    IF CAPACITY EXCEEDED ASSIGN EQUAL VEHICLE PROCESSING TIME TO EACH APPROACH
           IF(SNCAP .LT. SVOL) DELA(L,1) = SLANE/SNCAP*3600.*
          1 (1.0 + (QO + QUE(I,J) + 5.0)/2.0)
       76  DELA(L,2) = DELA(L,3) = DELA(L,1)
           DELAI(I,J) = DELA(L,1)
     *  QUEUE LENGH AT THE END OF TP
      767  QUEUE(L) = QO
           QUE(I,J) = QO
       77  CONTINUE
           IF(ISAVE .NE. I) PRINT 97
       97  FORMAT(1H-18X 85H N-APPR DELAY QUEUE    E-APPR DELAY QUEUE    S-AP
          1PR DELAY QUEUE    W-APPR DELAY QUEUE /24X4(5H(SEC),3X5H(VEH),9X))
           ISAVE = I+1
           PRINT 98, I, (DELAI(I,J), QUE(I,J), J=1,4)
       90  CONTINUE
       98  FORMAT (13H INTERSECTION I5, 4(F10.0,F7.0,5X))
           RETURN
           END
```

```
 SYMBOLIC REFERENCE MAP

ENTRY POINTS
    1  INSECU

VARIABLES      SN  TYPE             RELOCATION
  720  ABSV        REAL                                44  CAP       REAL       ARRAY    / /
 1275  CI          REAL        ARRAY   INTRST           0  COUNT     REAL       ARRAY    VOLUME
 1320  DELA        REAL        ARRAY   RESLT           64  DELAI     REAL       ARRAY    / /
 2641  DIST        REAL        ARRAY   LINK             6  DOW       REAL                COMM
    1  DVNAME      REAL        ARRAY   DEMVAR        2122  FCS       REAL       ARRAY    ZONES
   50  FEXAT       REAL        ARRAY   COMM            44  FEXGEN    REAL       ARRAY    COMM
   60  FINATT      REAL        ARRAY   COMM            54  FINGEN    REAL       ARRAY    COMM
 2742  FRAMIL      REAL        ARRAY   ZONES         1403  GCAP      REAL       ARRAY    INTRST
  171  GCNT15      REAL        ARRAY   GATE           145  GCOUNT    REAL       ARRAY    GATE
 5121  HEIGHT      REAL        ARRAY   LINK             0  I         INTEGER             COMM
  537  ICYCL       INTEGER     ARRAY   INTRST         727  IG        INTEGER
  730  IG1         INTEGER                             31  IOPT      INTEGER    ARRAY    COMM
   24  IPFLG       INTEGER     ARRAY   COMM           733  ISAVE     INTEGER
   13  ITM         INTEGER             COMM           431  ITYPC     INTEGER    ARRAY    INTRST
  722  I4          INTEGER                              3  J         INTEGER             COMM
  723  J1          INTEGER                            724  J2        INTEGER
    4  K           INTEGER             COMM             2  L         INTEGER             COMM
 3107  LANDU       INTEGER     ARRAY   ZONES         2261  LCAP      INTEGER    ARRAY    LINK
 3601  LCON        INTEGER     ARRAY   LINK             1  LGATE     INTEGER    ARRAY    GATE
   15  LHEAD       INTEGER     ARRAY   COMM             1  LIN       INTEGER    ARRAY    INTRST
   40  NCLB        INTEGER             COMM            42  NDEMVC    INTEGER             COMM
    0  NDV         INTEGER             DEMVAR        1357  NEXT      INTEGER             ZONES
 3106  NEXT1       INTEGER             ZONES            0  NGATE     INTEGER             GATE
  311  NGATE1      INTEGER             GATE             0  NI        INTEGER             INTRST
    1  NLANE       INTEGER     ARRAY   LINK             0  NLINK     INTEGER             LINK
   43  NNAME       INTEGER             COMM            37  NPLT      INTEGER             COMM
   41  NPLU        INTEGER             COMM          5501  NSTOPS    INTEGER    ARRAY    LINK
   14  NYEAR       INTEGER             COMM             1  NZLINKS   INTEGER    ARRAY    ZONES
    0  NZONES      INTEGER             ZONES          645  PH        REAL       ARRAY    INTRST
   63  PLA         REAL        ARRAY   PARKZ          732  PNS       REAL
 2640  PRT         REAL        ARRAY   RESLT            0  PT        REAL       ARRAY    / /
    1  PV          REAL        ARRAY   PARKZ            0  PZ        INTEGER             PARKZ
  731  QO          REAL                              2033  QUE       REAL       ARRAY    INTRST
 2722  QUEUE       REAL        ARRAY   RESLT          726  R         REAL
  721  SCAP        REAL                               716  SLANE     REAL
  725  SNCAP       REAL                               717  SVOL      REAL
    5  TOD         REAL                COMM            10  TOTATT    REAL                COMM
   12  TOTGEN      REAL                COMM             7  TP        REAL                COMM
   64  TP15        REAL                COMM             0  TT        REAL       ARRAY    RESLT
   11  TTPZ        REAL                COMM           736  V         REAL       ARRAY
   13  VAR         REAL        ARRAY   DEMVAR          25  VCR       REAL       ARRAY    GATE
 1364  VEHTYP      REAL        ARRAY   ZONES         3221  VEL       REAL       ARRAY    LINK
   14  VOL         REAL        ARRAY   / /           2204  VTYPM     REAL       ARRAY    ZONES
  145  VZ          REAL        ARRAY   PARKZ          734  W         INTEGER    ARRAY
   27  XP          INTEGER             COMM           361  X1        REAL       ARRAY    LINK
 1321  X2          REAL        ARRAY   LINK            30  Y         REAL       ARRAY    / /
   30  YP          INTEGER             COMM            60  YT        REAL       ARRAY    / /
  741  Y1          REAL        ARRAY   LINK          1701  Y2        REAL       ARRAY    LINK
```

```
         SUBROUTINE  INSECU      TRACE                         CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE     5

VARIABLES      SN  TYPE             RELOCATION
     1  Z          INTEGER              COMM           1360  ZAT       REAL      ARRAY     ZONES
  1213  ZATTR      REAL       ARRAY     ZONES          1275  ZGENR     REAL      ARRAY     ZONES
  1362  ZGT        REAL       ARRAY     ZONES            63  ZLINKS    INTEGER   ARRAY     ZONES
  2040  ZNAME      INTEGER    ARRAY     ZONES           227  ZV        REAL      ARRAY     PARKZ

FILE NAMES         MODE
         OUTPUT     FMT

EXTERNALS           TYPE   ARGS
         ABS       REAL      1                              AMAX1     REAL      2
         AMIN1     REAL      2                              MAXO      INTEGER   2
         MOD       INTEGER   2

STATEMENT LABELS
     0  71          INACTIVE              177  73                               0  75           INACTIVE
   543  76                                  0  77                               0  90           INACTIVE
   656  97       FMT                      674  98       FMT                   110  715
   147  723                              .155  725                            165  727
   173  729                               236  735                            266  738
   357  741                               361  742                              0  744
   412  746                               441  747                              0  746           INACTIVE
   447  749                               557  767

COMMON BLOCKS    LENGTH
         COMM        53
         LINK      3121
         INTRST    1331
         ZONES     1657
         DEMVAR     511
         GATE       202
         VOLUME    4320
         PARKZ      201
         RESLT     1730
         / /        332

STATISTICS
   PROGRAM LENGTH     742B      482
    COMMON LENGTH  315066B    13126
     BLANK COMMON     514B      332
```

```
SUBROUTINE  PARKNG    TRACE                                   CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE      1

          SUBROUTINE PARKNG
      *  THIS SUB-MODEL PREDICTS AVERAGE TRAVEL TIME TO VEHICLES ENTERING A
      *  PARKING AREA OR ZONE.  AT AN AVERAGE SPEED OF 7.0 MPS VEHICLES MOVE
      *  THROUGH THE PARKING ZONE. TRAVEL TIME (TT) IN THE ZONE IS PROPORTIONL
      *  TO THE PARKED VEHICLE TO ZONE CAPACITY RATIO.  QUEUEING OCCURS WHEN
      *  HEADWAYS ARE LESS THAN THE TIME REQUIRED TO BACK OUT OF AND TO CLEAR
      *  A PARKING STALL, OR WHEN VEHICLES MOVING IN THE ZONE PLUS PARKED
      *  VEHICLES EXCEEDS CAPACITY.
          COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
         1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
         2,NDEMVC,NPLOT,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
          INTEGER Z,XP,YP
          COMMON /PARKZ/ PZ,       PV(50), PLA(50), VZ(50), ZV(50),PD,PLS,PLB
         1O, PNOS(50) , PLL(50)
          INTEGER PNOS,PZ
          COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
         1ZGENR (50), NEXT, ZAT(2), ZGT(2), VEHTYP(6,50), ZNAME(50),FCS(50)
         2,VTYPM(7,50),FRAMIL(50,2),NEXT1,LANDU(50)
          INTEGER ZLINKS,ZNAME
          COMMON /DEMVAR/ NDV,DVNAME(10),VAR(10,50)
      *  VZ ARE ZONE ATTRACTIONS AND ZV ARE ZONE GENERATIONS
          REAL NVL
      *  COMPUTE THE CAPACITY OF THE PARKING ZONE
          Z = PZ
          PC = PLA(PZ) / PD
      *  COMPUTE MAXIMUM PARKING LOT DISCHARGE RATE
          PLDR = AMAX1(0.5,PC/2400.)
      *  COMPUTE THE TOTAL DRIVEABLE LENGTH OF THE PARKING ZONE
      *   STALLS ASSUMED 3 METERS IN WIDTH AND AT 45DEGREE ANGLE
      *   PLL= PC *3.0/ 1.414
          PL = PLL(PZ)
      *  COMPUTE THE PARKED VEHICLES AT END OF TIME PERIOD
          PVZ =AMAX1 (    VZ( Z) - ZV( Z) +PV(PZ) ,0.0)
      C  COMPUTE PARKING UTILIZATION
          PU = PVZ / PC
      C   COMPUTE SPEED BASED ON GCA VALIDATION STUDY OF CO MODEL AUG 74 P27
            PLSS = PLS
          PLS = 6.4-3.6*PU
          PLS = AMAX1 (3.28,PLS)
      *  ASSIGN A PARGING LOT SPEED BASED ON TACOMA STUDY
      *   PLS = 9.3
      *  THE TRAVEL TIME FOR ARRIVING VEHICLES
      *   IF(PU.LT. .99) GO TO 21
      *   TTA = PU * PL/PLS
      *   GO TO 25
      *21  TTA =  (PVZ + PV(PZ))/2.0 /PC *PL /PLS
      *  DEPARTURES EXPERIENCE DIFFERENT TRAVEL TIME
      *25  TTA = AMAX1 (TTA,PL/2.0/PLS)
      *    TTA = AMAX1(TTA, PLA(PZ) / PL / PLS)
          TTA = PL/PLS
          TTD = TTA + PLBO
      *
      *  QUEUEING
      *
      *   NVL I S THE NUMBER OF VEHICLES DRIVING THRU THE LOT AT ANY TIME
```

```
      DQ = 0.0
      NVL =(TTA= VZ(Z) + TTD= ZV(Z))/TP + .000278
      IF(NVL + PVZ - PC .GE. 0.0) GO TO 33
      IF(PU.GE. 0.85) GO TO 33
*  CHECK HEADWAYS AGAINST TIME TO BACK OUT OF STALL
*  THERE IS NO QUEUEING.
      AWQ= 0.0
      GO TO 39
*  COMPUTE THE DELAY CAUSED BY WAITING FOR VEHICLES TO BACK OUT OF STALS
 33   IF(VZ(Z) .GT. 0.0)
     1DQ =AMAX1 ( PLBO= PLBO/(2.0*(TP/ VZ(Z) -1.0/PLDR)),PLBO/2.0)*
     1 (PU-.85)/0.15
*  COMPUTE THE DELAY CAUSED BY EXCEEDENCE OF PARKING ZONE CAPACITY
      AWQ = 0.0
      IF ( PVZ + PV(PZ) + NVL .LE. PC*2.0) GO TO 35
      AWQ =((PVZ + PV(PZ))/2.0 + NVL - PC)* TP/(ZV(Z) + 1.0)
      GO TO 39
 35   IF ( PVZ .GE. PC)  GO TO 37
      IF ( PV(PZ) .LT. PC ) GO TO 39
*  EXISTING QUEUE IS DISSIPATING
      FACT=PV(PZ)-PC+NVL
      AWQ = FACT * FACT / (ZV(Z) - VZ(Z)) * 0.5 * TP / ZV(Z)
      GO TO 39
*  ARRIVALS ARE BUILDING A QUEUE
 37   FACT = PVZ-PC+NVL
      AWQ = FACT * FACT / (VZ(Z) - ZV(Z)) * 0.5 * TP / (ZV(Z) + 1.)
 39   CONTINUE
*     ADD A VEHICLE IDLEING TIME IF NO QUEUE EXISTS
*     THIS INCLUDES COSTS TO ENTER THE ZONE BASED ON TACOMA STUDY
*     AWQ = AMAX1(AWQ,0.67*TTA)
      PLS = PLSS
*  TOTAL THE RUNNING TIME IN PARKING ZONE
      TTPZ=(TTA + DQ + AWQ) * VZ(Z)  + (TTD + AWQ) * ZV(Z)
      IF(PZ .EQ. NEXT1) PRINT 97
 97   FORMAT (1H-15X, 4HZONE,8X,10HTOTAL TIME 3X 7HTT ARRV,3X 7HTT DEPT,
     12X8HBACKNG Q,3X 7HQ DELAY,3X 7HDEPARTS,3X 7HARRVALS,4X6HLENGTH/
     2,32X,5H(SEC),4(5X5H(SEC)),2(5X5H(VEH)),4X8H(METERS))
      PRINT 98, ZNAME(Z), TTPZ, TTA, TTD, DQ, AWQ, ZV(Z),VZ(Z), PL
 98   FORMAT (* PARKNG* ,10X,A10,10F10.3)
      RETURN
      END
```

```
SYMBOLIC REFERENCE MAP

ENTRY POINTS
    1   PARKNG

VARIABLES        SN  TYPE            RELOCATION
  345   AWG           REAL                                   6  DOW        REAL                  COMM
  344   DQ            REAL                                   1  DVNAME     REAL        ARRAY     DEMVAR
  346   FACT          REAL                                2122  FCS        REAL        ARRAY     ZONES
   50   FEXAT         REAL        ARRAY    COMM             44  FEXGEN     REAL        ARRAY     COMM
   60   FINATT        REAL        ARRAY    COMM             54  FINGEN     REAL        ARRAY     COMM
 2742   FRAMIL        REAL        ARRAY    ZONES             0  I          INTEGER               COMM
   31   IOPT          INTEGER     ARRAY    COMM             24  IPFLG      INTEGER     ARRAY     COMM
   13   ITM           INTEGER              COMM              3  J          INTEGER               COMM
    4   K             INTEGER              COMM              2  L          INTEGER               COMM
 3107   LANDU         INTEGER     ARRAY    ZONES            15  LHEAD      INTEGER     ARRAY     COMM
   40   NCLS          INTEGER              COMM             42  NDEMVC     INTEGER               COMM
    0   NDV           INTEGER              DEMVAR         1357  NEXT       INTEGER               ZONES
 3106   NEXT1         INTEGER              ZONES            43  NPLOT      INTEGER               COMM
   37   NPLT          INTEGER              COMM             41  NPLU       INTEGER               COMM
  333   NVL           REAL                                  14  NYEAR      INTEGER               COMM
    1   NZLINKS       INTEGER     ARRAY    ZONES             0  NZONES     INTEGER               ZONES
  334   PC            REAL                                 311  PD         REAL                  PARKZ
  336   PL            REAL                                  63  PLA        REAL        ARRAY     PARKZ
  313   PLBO          REAL                 PARKZ           335  PLDR       REAL
  376   PLL           REAL        ARRAY    PARKZ           312  PLS        REAL                  PARKZ
  341   PLSS          REAL                                 314  PNOS       INTEGER     ARRAY     PARKZ
  340   PU            REAL                                   1  PV         REAL        ARRAY     PARKZ
  337   PVZ           REAL                                   0  PZ         INTEGER               PARKZ
    5   TOD           REAL                 COMM             10  TOTATT     REAL                  COMM
   12   TOTGEN        REAL                 COMM              7  TP         REAL                  COMM
   64   TP15          REAL                 COMM            342  TTA        REAL
  343   TTD           REAL                                  11  TTPZ       REAL                  COMM
   13   VAR           REAL        ARRAY    DEMVAR         1364  VEHTYP     REAL        ARRAY     ZONES
 2204   VTYPM         REAL        ARRAY    ZONES           145  VZ         REAL        ARRAY     PARKZ
   27   XP            INTEGER              COMM             30  YP         INTEGER               COMM
    1   Z             INTEGER              COMM           1360  ZAT        REAL        ARRAY     ZONES
 1213   ZATTR         REAL        ARRAY    ZONES          1275  ZGENR      REAL        ARRAY     ZONES
 1362   ZGT           REAL        ARRAY    ZONES            63  ZLINKS     INTEGER     ARRAY     ZONES
 2040   ZNAME         INTEGER     ARRAY    ZONES           227  ZV         REAL        ARRAY     PARKZ

FILE NAMES        MODE
     OUTPUT        FMT

EXTERNALS           TYPE   ARGS
     AMAX1        REAL       2

STATEMENT LABELS
   72  33                             137  35                                 164  37
  202  39                             273  97      FMT                        314  98      FMT

COMMON BLOCKS    LENGTH
     COMM            53
     PARKZ          304
```

```
      SUBROUTINE  PARKNG      TRACE

COMMON BLOCKS    LENGTH
      ZONES       1657
      DEMVAR       511

STATISTICS
   PROGRAM LENGTH    347B      231
     COMMON LENGTH  4735B     2525
```

```
      SUBROUTINE COORXY
*     PURPOSE IS TO ORGANIZE THE X,Y COORDINATES OF EACH LINK SO THAT
*     X1, Y1 ARE UPSTREAM AND X2, Y2 ARE THE DOWNSTREAM COORDINATES.
*     ALSO CONVERT COORDINATES FROM METERS IN THIS WRITING
*     OF THE SUBROUTINE.
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3)
     2,NSTOPS(240)
      DATA FOTMET / 0.3048 /
*
      DO 900 L = 1,NLINK
         DO 100 J = 1,3
         IF(LCON(L,J) .EQ. 0) GO TO 100
         LC = LCON(L,J)
         GO TO 200
  100    CONTINUE
      GO TO 900
*
*     COMPUTE DISTANCES
  200 CONTINUE
      X1MX1=X1(L)-X1(LC)
      X1MX2=X1(L)-X2(LC)
      X2MX1=X2(L)-X1(LC)
      X2MX2=X2(L)-X2(LC)
      Y1MY1=Y1(L)-Y1(LC)
      Y1MY2=Y1(L)-Y2(LC)
      Y2MY1=Y2(L)-Y1(LC)
      Y2MY2=Y2(L)-Y2(LC)
      DIST1 = X1MX1*X1MX1 + Y1MY1*Y1MY1
      DIST2 = X1MX2*X1MX2 + Y1MY2*Y1MY2
      DIST3 = X2MX1*X2MX1 + Y2MY1*Y2MY1
      DIST4 = X2MX2*X2MX2 + Y2MY2*Y2MY2
*
      LC1 = 0
      IF(DIST1 - DIST2)400,250,250
  250 CONTINUE
      IF(DIST2 - DIST3)280,300,300
  280 CONTINUE
      IF(DIST2 - DIST4)290,300,300
  290 CONTINUE
      LC1 = 1
      GO TO 700
  300 CONTINUE
      IF(DIST3 - DIST4)850,850,750
  400 CONTINUE
      IF(DIST1 - DIST3)450,450,500
  450 CONTINUE
      IF(DIST1 - DIST4)700,700,500
  500 CONTINUE
      IF(DIST3 - DIST4)850,850,750
  700 CONTINUE
      XTEMP = X1(L)
      X1(L) = X2(L)
      X2(L) = XTEMP
      YTEMP = Y1(L)
```

```
      SUBROUTINE  COORXY    TRACE                        CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE     2
                  Y1(L) = Y2(L)
                  Y2(L) = YTEMP
                  IF(LC1)750,650,750
            750   CONTINUE
                  XTEMP = X1(LC)
                  X1(LC) = X2(LC)
                  X2(LC) = XTEMP
                  YTEMP = Y1(LC)
                  Y1(LC) = Y2(LC)
                  Y2(LC) = YTEMP
            650   CONTINUE
            900   CONTINUE
      *           DO 910 L=1,NLINK
      *           CONVERT X1 X2 Y1 Y2 FROM FEET TO METERS
      *           X1(L) = X1(L) * FOTMET
      *           X2(L) = X2(L) * FOTMET
      *           Y1(L) = Y1(L) * FOTMET
      *           Y2(L) = Y2(L) * FOTMET
            910   CONTINUE
                  RETURN
                  END
```

```
SUBROUTINE  COORXY    TRACE                                    CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE        3

SYMBOLIC REFERENCE MAP

ENTRY POINTS
    1  COORXY

VARIABLES         SN  TYPE             RELOCATION
  2641  DIST           REAL        ARRAY    LINK              233  DIST1      REAL
   234  DIST2          REAL                                   235  DIST3      REAL
   236  DIST4          REAL                                   217  FOTMET     REAL
   221  J              INTEGER                                220  L          INTEGER
   222  LC             INTEGER                               2261  LCAP       INTEGER    ARRAY    LINK
  3601  LCON           INTEGER     ARRAY    LINK              237  LC1        INTEGER
     1  NLANE          INTEGER     ARRAY    LINK                0  NLINK      INTEGER             LINK
  5121  NSTOPS         INTEGER     ARRAY    LINK             3221  VEL        REAL       ARRAY    LINK
   240  XTEMP          REAL                                   361  X1         REAL       ARRAY    LINK
   223  X1MX1          REAL                                   224  X1MX2      REAL
  1321  X2             REAL        ARRAY    LINK              225  X2MX1      REAL
   226  X2MX2          REAL                                   241  YTEMP      REAL
   741  Y1             REAL        ARRAY    LINK              227  Y1MY1      REAL
   230  Y1MY2          REAL                                  1701  Y2         REAL       ARRAY    LINK
   231  Y2MY1          REAL                                   232  Y2MY2      REAL

STATEMENT LABELS
    17  100                          22  200                                        0  250          INACTIVE
     0  260        INACTIVE           0  290          INACTIVE                    128  300
   131  400                           0  450          INACTIVE                    137  500
   142  700                         167  750                                      213  850
   213  900                           0  910          INACTIVE

COMMON BLOCKS   LENGTH
    LINK         2881

STATISTICS
   PROGRAM LENGTH      242B     162
    COMMON LENGTH     5501B    2881
```

```
          SUBROUTINE MNPATH (LINKS, NL, C1, C2)
*     THIS ROUTINE COMPUTES THE MINIMUM TIME PATH    FROM NL ORIGIN LINKS
*     L TO ALL ACCESSABLE LINKS IN A TRAFFIC NETWORK. ARRAY C STORES THE
*     COST OR TRAVEL TIME TO EACH LINK AND ARRAY R STORES THE ROUTES FROM
*     EACH LINK TO L ON COMPLETION.  C1 AND C2 ARE INITIAL COSTS TO 1ST 2 LINKS.
          COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
         1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
         2,NDEMVC,NPLOT,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
          INTEGER Z,XP,YP
          COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
         1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
         2,NSTOPS(240)
          COMMON /RESLT/ TT(240,3),DELA(240,3),PRT(50),QUEUE(240)
          COMMON R(240),C(240),RG(10,240),CG(10,240)
          INTEGER R,RG
          DIMENSION LINKS(12)
          NC = NLINK
          DO 15 L = 1, NC
   15     C (L) = 1.0E10
          DO 17 L = 1, NC
   17     R (L) = 0
          L=1
          DO 19 I =1,NL
          IF (LINKS(I) .LE.0) GO TO 19
          L = LINKS(I)
          C (L) = -C2
          IF (I.EQ.1) C(L)=-C1
   19     CONTINUE
          GO TO 3
   20     IF ( L.GE. NLINK) L = 0
          L = L +1
          IF (L .EQ. LS ) GO TO 9
   25     IF (C(L) .GE. 0) GO TO 20
    3     LF = 0
          DO  4 J =1,3
          LC = LCON(L,J)
          IF ( LC .EQ. 0) GO TO 4
          IF  (TT(L,J) - C(L) .GE. ABS(C(LC))) GO TO 4
          C (LC) = C(L) - TT(L,J)
          R (LC) = L
          LF =  J
    4     CONTINUE
          C (L) = -C(L)
          LS = L
          IF ( LF .EQ. 0) GO TO 20
          L = LCON(L, LF)
          GO TO 3
    9     CONTINUE
*         PRINT 98,(R(L),C(L),L=1,NC)
          RETURN
*98       FORMAT (* MPATH*/5(I5, F10.0))
          END
```

```
      SUBROUTINE  MNPATH   TRACE                              CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE      2

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
   2  MNPATH

VARIABLES      SN  TYPE              RELOCATION
  360  C            REAL       ARRAY     / /         5500  CG          REAL        ARRAY      / /
    0  CI           REAL                 F.P.           0  C2          REAL                    F.P.
 1320  DELA         REAL       ARRAY     RESLT       2641  DIST        REAL        ARRAY      LINK
    6  DOW          REAL                 COMM          50  FEXAT       REAL        ARRAY      COMM
   44  FEXGEN       REAL       ARRAY     COMM          60  FINATT      REAL        ARRAY      COMM
   54  FINGEN       REAL       ARRAY     COMM        5121  HEIGHT      REAL        ARRAY      LINK
    0  I            INTEGER              COMM          31  IOPT        INTEGER     ARRAY      COMM
   24  IPFLG        INTEGER    ARRAY     COMM          13  ITM         INTEGER                COMM
    3  J            INTEGER              COMM           4  K           INTEGER                COMM
    2  L            INTEGER              COMM         174  LC          INTEGER
 2261  LCAP         INTEGER    ARRAY     LINK        3601  LCON        INTEGER     ARRAY      LINK
  173  LF           INTEGER                            15  LHEAD       INTEGER     ARRAY      COMM
    0  LINKS        INTEGER    ARRAY     F.P.         172  LS          INTEGER
  171  NC           INTEGER                            40  NCLB        INTEGER                COMM
   42  NDEMVC       INTEGER              COMM           0  NL          INTEGER                 F.P.
    1  NLANE        INTEGER    ARRAY     LINK           0  NLINK       INTEGER                LINK
   43  NPLOT        INTEGER              COMM          37  NPLT        INTEGER                COMM
   41  NPLU         INTEGER              COMM        5501  NSTOPS      INTEGER     ARRAY      LINK
   14  NYEAR        INTEGER              COMM        2640  PRT         REAL        ARRAY      RESLT
 2722  QUEUE        REAL       ARRAY     RESLT          0  R           INTEGER     ARRAY      / /
  740  RG           INTEGER    ARRAY     / /            5  TGD         REAL                   COMM
   10  TOTATT       REAL                 COMM          12  TOTGEN      REAL                   COMM
    7  TP           REAL                 COMM          64  TP15        REAL                   COMM
    0  TT           REAL       ARRAY     RESLT         11  TTPZ        REAL                   COMM
 3221  VEL          REAL       ARRAY     LINK          27  XP          INTEGER                COMM
  361  X1           REAL       ARRAY     LINK        1321  X2          REAL        ARRAY      LINK
   30  YP           INTEGER              COMM         741  Y1          REAL        ARRAY      LINK
 1701  Y2           REAL       ARRAY     LINK           1  Z           INTEGER                COMM

EXTERNALS             TYPE    ARGS
      ABS             REAL      1

STATEMENT LABELS
   77  3                                      142  4                                         163  9
    0  15                                       0  17                                         56  19
   62  20                                       0  25        INACTIVE

COMMON BLOCKS    LENGTH
      COMM           53
      LINK         3121
      RESLT        1730
      / /          5280

STATISTICS
   PROGRAM LENGTH      206B      134
    COMMON LENGTH    11450B     4904
     BLANK COMMON    12240B     5280
```

```
SUBROUTINE  ZAREA      TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE     1

            SUBROUTINE ZAREA
      *   EACH ZONE IS DEFINED BY ADJACENT LINKS FROM WHICH VEHICLES ACCESS
      *   THAT ZONE.  IN ADDITION PARKING ZONE LINKS MUST ENCLOSE AN AREA
      *   AND THAT AREA IS ASSIGNED A CERTAIN NUMBER OF VEHICLE PARKING SPACES.
      *   OF COURSE ALL LINKS SURROUNDING THE AREA MUST BE CONNECTED, OTHERWISE
      *   THE AREA WILL NECESSARILY BE INFINITE.  ONE EXCPTION---THE LAST LINK
      *   NEED NOT CONNECT TO THE FIRST LINK WHEN LESS THAN 6 LINKS DEFINE THE
      *   ZONE.
            COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
           1, LCAP(240), DIST(240), VEL(240), LCON (240,3)
           2,NSTOPS(240)
            COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
           1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
            COMMON /CHD/ TODE,TODS,BAT(3),NYR,NMO,NDAY
            COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
           1ZGENR (50), NEXT, ZAT(2), ZOT(2), VEHTYP(6,50), ZNAME(50),FCS(50)
           2,VTYPM(7,50),FRAMIL(50,2),NEXT1,LANDU(50)
            INTEGER ZNAME,ZLINKS
            COMMON /DEMVAR/ NDV,DVNAME(10),VAR(10,50)
            DIMENSION  PX(13), PY(13), TRIARE(13)
            COMMON /PARKZ/  PZ,      PV(50), PLA(50), VZ(50), ZV(50),PD,PLS,PLBO
           1, PNOS(50),PLL(50)
            INTEGER PNOS,PZ
            INTEGER Z
            DO 52 Z=1,NZONES
            SAVPLA = PLA(Z)
            XYMAX=0.0
            NLT=PNOS(Z)
            DO 12 NL=1,NLT
            L = IABS (ZLINKS(NL,Z))
            X1MX2=X1(L)-X2(L)
            Y1MY2=Y1(L)-Y2(L)
            XYMAX = AMAX1 ( (X1MX2*X1MX2+Y1MY2*Y1MY2) , XYMAX )
         12 CONTINUE
            PLL(Z)=SQRT(XYMAX)
            PLL(Z)=PLL(Z)+PLA(Z)/PLL(Z)
            IF(PLA(Z).NE.0.)GO TO 52
            IF(Z .LE. NEXT) GO TO 52
            XYMAX = 0.0
            DO 29 NL = 1, NLT
            L = IABS (ZLINKS(NL,Z))
            X1MX2=X1(L)-X2(L)
            Y1MY2=Y1(L)-Y2(L)
            XYMAX = AMAX1 ( (X1MX2*X1MX2+Y1MY2*Y1MY2) , XYMAX )
      *  SPECIAL HANDLING IS REQUIRED FOR THE FIRST AND SECOND LINKS
            IF ( NL - 2) 13, 17, 20
         13 PX(1) = X1(L)
            PX(2) = X2(L)
            PY(1) = Y1(L)
            PY(2) = Y2(L)
            LT = L
            GO TO 27
         17 IF (PX(2) .NE. X2(L) ) GO TO 18
            IF (PY(2) .EQ. Y2(L) ) GO TO 24
      *  THE END POINTS FAIL TO MATCH, TWO POSSIBLE MATCHES REMAIN
```

```
 18   IF (PX(2) .NE. X1(L)) GO TO 19
      IF (PY(2) .EQ. Y1(L)) GO TO 26
*  THE END POINTS FAIL TO MATCH, ONE POSSIBLE MATCH REMAINS
 19   PX(2) = PX(1)
      PY(2) = PY(1)
      PX(1) = X2(LT)
      PY(1) = Y2(LT)
*  DETERMIN WHICH END OF LINK L CONECTS TO THE PREVIOUS LINK
 20   IF ( PX(NL) .NE. X1(L)) GO TO 22
      IF ( PY(NL) .EQ. Y1(L)) GO TO 26
 22   IF ( PX(NL) .NE. X2(L)) GO TO 23
      IF( PY(NL) .EQ. Y2(L)) GO TO 24
*  THE NUMBER OF CONNECTED POINTS IS SAVED IN NPT
 23   NPT = NL
*  THE FIGURE IS NOT CONNECTED AT THE LINK END POINTS
      PRINT 923, ZNAME(Z), ZLINKS(NL-1,Z),L
 923  FORMAT (7H ZONE  ,A2,32H  IS DISCONNECTED BETWEEN LINKS I4,
     1 4H AND, I4)
      GO TO 30
 24   PX(NL+1) = X1(L)
      PY(NL+1) = Y1(L)
      GO TO 27
 26   PX(NL+1) = X2(L)
      PY(NL+1) = Y2(L)
 27    CONTINUE
      TRIARE(NL)=(PY(NL)+PY(NL+1))*(PX(NL)-PX(NL+1))/2.0
 29   NPT = NL + 1
*
*      EACH AREA COMPUTED IS A POSSIBLE SUBTRACTION FROM THE TOTAL AREA.
*      WHEN  IT COVERS THE TRIANGLE CREATED BY CONSTRUCTED SIDES, SUB-
*      TRACT THE AREA.
*  IF A CLOSING LINK WAS LEFT OUT ASSUME IT EXISTS
 30   IF ( PX(NPT) .NE. PX(1)) GO TO 32
      IF ( PY(NPT) .NE. PY(1)) GO TO 32
      NPT = NPT -1
 31   PLL(Z) = -SQRT(XYMAX)
      GO TO 40
*   ONE LINK ZONES ARE LEGAL, ASSUME 12+12+14+14 FOOT WIDTH
 32   IF(NPT .GT. 2) GO TO 35
      PLL(Z) = SQRT(XYMAX)
      PLA(Z) = PLL(Z) * 52.0
      GO TO 50
 35    TRIARE(NPT)=(PY(NPT)+PY(1))*(PX(NPT)-PX(1))/2.0
 40    DO 495 IA=1,NPT
 493  PLA(Z) = PLA(Z) + TRIARE(IA)
 495  CONTINUE
 50   PLA (Z) = ABS (PLA(Z))
      IF(PLL(Z) .LT. 0.0) PLL(Z) = -PLA(Z)/PLL(Z) - PLL(Z)
      IF(SAVPLA .NE. 0.0) PLA(Z) = SAVPLA
 52   PLL(Z) = AMAX1(PLL(Z),1.0)
      PRINT 953
 953  FORMAT (40X,*B.1. ZONE PARKING CAPACITIES AND TRIP LENGTHS*
     1/31X,*ZONE  CAPACITY  LENGTH   TRAVEL TIME   ALTERNATE*
     2* TRAVEL TIME*)
      DO 57 Z = 1,NZONES
```

```
      IF (Z.GT.NEXT) GO TO 54
      PCAP=-0.0
      PTT=PLA(Z)
      PTTA=PV(Z)
      GO TO 57
 54   PTT=PLL(Z)/6.4
      PTTA=PTT
      PCAP = PLA(Z)/PD
 57   PRINT 957,ZNAME(Z),PCAP,PLL(Z),PTT,PTTA
 957  FORMAT (33X,A2,F10.0,F9.0,F11.0,F24.0)
      RETURN
      END
```

```
        SUBROUTINE  ZAREA     TRACE                                    CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE      4

        SYMBOLIC REFERENCE MAP

ENTRY POINTS
    1   ZAREA

VARIABLES       SN  TYPE               RELOCATION
    2   BAT         REAL         ARRAY    CHD               2641  DIST      REAL        ARRAY     LINK
    6   DOW         REAL                  COMM                 1  DVNAME    REAL        ARRAY     DEMVAR
 2122   FCS         REAL         ARRAY    ZONES             2742  FRAMIL    REAL        ARRAY     ZONES
    0   I           INTEGER               COMM               564  IA        INTEGER
   31   IOPT        INTEGER      ARRAY    COMM                24  IPFLG     INTEGER     ARRAY     COMM
   13   ITM         INTEGER               COMM                 3  J         INTEGER               COMM
    4   K           INTEGER               COMM                 2  L         INTEGER               COMM
 3107   LANDU       INTEGER      ARRAY    ZONES             2261  LCAP      INTEGER     ARRAY     LINK
 3601   LCON        INTEGER      ARRAY    LINK                15  LHEAD     INTEGER     ARRAY     COMM
  562   LT          INTEGER                                   40  NCLB      INTEGER               COMM
    7   NDAY        INTEGER               CHD                  0  NDV       INTEGER               DEMVAR
 1357   NEXT        INTEGER               ZONES             3106  NEXT1     INTEGER               ZONES
  557   NL          INTEGER                                    1  NLANE     INTEGER     ARRAY     LINK
    0   NLINK       INTEGER               LINK               556  NLT       INTEGER
    6   NMO         INTEGER               CHD                 37  NPLT      INTEGER               COMM
   41   NPLU        INTEGER               COMM               563  NPT       INTEGER
 5121   NSTOPS      INTEGER      ARRAY    LINK                14  NYEAR     INTEGER               COMM
    5   NYR         INTEGER               CHD                  1  NZLINKS   INTEGER     ARRAY     ZONES
    0   NZONES      INTEGER               ZONES              565  PCAP      REAL
  311   PD          REAL                  PARKZ               63  PLA       REAL        ARRAY     PARKZ
  313   PLBO        REAL                  PARKZ              376  PLL       REAL        ARRAY     PARKZ
  312   PLS         REAL                  PARKZ              314  PNOS      INTEGER     ARRAY     PARKZ
  566   PTT         REAL                                     567  PTTA      REAL
    1   PV          REAL         ARRAY    PARKZ              570  PX        REAL        ARRAY
  605   PY          REAL         ARRAY                         0  PZ        INTEGER               PARKZ
  554   SAVPLA      REAL                                       5  TOD       REAL                  COMM
    0   TODE        REAL                  CHD                  1  TODS      REAL                  CHD
   10   TOTATT      REAL                  COMM                12  TOTGEN    REAL                  COMM
    7   TP          REAL                  COMM               622  TRIARE    REAL        ARRAY
   11   TTPZ        REAL                  COMM                13  VAR       REAL        ARRAY     DEMVAR
 1364   VEHTYP      REAL         ARRAY    ZONES             3221  VEL       REAL        ARRAY     LINK
 2204   VTYPM       REAL         ARRAY    ZONES              145  VZ        REAL        ARRAY     PARKZ
   27   XP          REAL                  COMM               555  XYMAX     REAL
  361   X1          REAL         ARRAY    LINK               560  X1MX2     REAL
 1321   X2          REAL         ARRAY    LINK                30  YP        REAL                  COMM
  741   Y1          REAL         ARRAY    LINK               561  Y1MY2     REAL
 1701   Y2          REAL         ARRAY    LINK                 1  Z         INTEGER               COMM
 1360   ZAT         REAL         ARRAY    ZONES             1213  ZATTR     REAL        ARRAY     ZONES
 1275   ZGENR       REAL         ARRAY    ZONES             1362  ZGT       REAL        ARRAY     ZONES
   63   ZLINKS      INTEGER      ARRAY    ZONES             2040  ZNAME     INTEGER     ARRAY     ZONES
  227   ZV          REAL         ARRAY    PARKZ

FILE NAMES          MODE
        OUTPUT      FMT

EXTERNALS             TYPE     ARGS
        ABS         REAL         1                                AMAX1     REAL        2
        IABS        INTEGER      1                                SQRT      REAL        1
```

```
      SUBROUTINE  ZAREA      TRACE                         CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE     5

STATEMENT LABELS
    0  12                                      0  13            INACTIVE                     144  17
  156  18                                    170  19                                         204  20
  220  22                                    234  23                                         254  24
  265  26                                    275  27                                           0  29
  315  30                                      0  31            INACTIVE                     336  32
  352  35                                    363  40                                         375  50
  425  52                                    454  54                                         464  57
    0  493         INACTIVE                    0  495                                        520  923      FMT
  527  953      FMT                          544  957      FMT

COMMON BLOCKS   LENGTH
          LINK       2881
          COMM         34
          CHD           8
          ZONES      1657
          DEMVAR      511
          PARKZ       304

STATISTICS
  PROGRAM LENGTH      637B      415
   COMMON LENGTH   12423B     5395
```

```
      SUBROUTINE TRIPGEN
C
C     THIS SUBPROGRAM GENERATES TRIP-END PRODUCTIONS
C     AND ATTRACTIONS AS LINEAR FUNCTIONS OF UP TO TEN
C     DEMOGRAPHIC VARIABLES AND 15 TRIP PURPOSES.
C
      COMMON /COMM/I,Z,L,J,K,TOD,DOW,TP,TOTATT,TTPZ,TOTGEN,ITM,
     1NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU,
     2NDEMVC,NNAME,FEXGEN(4),FEXATT(4),FINGEN(4),FINATT(4),TP15
      COMMON /CHD/ TODE,TODS,BAT(3),NYR,NMO,NDAY
      INTEGER Z,XP,YP
      COMMON /DEMVAR/ NDV,DVNAME(10),VAR(10,50)
      COMMON /ZONES/NZONES,NZLINKS(50),ZLINKS(12,50),ZATTR(50),
     1ZGENR(50),NEXT,ZAT(2),ZGT(2),VEHTYP(6,50),ZNAME(50),
     2FCS(50),VTYPM(7,50),FRAMIL(50,2),NEXT1,LANDU(50)
      INTEGER ZLINKS,ZNAME
      COMMON /GATE/NGATE,LGATE(2,10),VCR(10,2,4),GCOUNT(2,10)
     1,GCNT15(10,2,4),NGATE1
      COMMON /TRIP/NTRIP,FCSP(15,2),IFCSIZ(15),PURP(15),NVARO(4,15)
     1,COEFO(4,15),NVARD(4,15),COEFD(4,15),NTRIPC,
     1LANDO(4,15),LANDD(4,15),PLUALU(7,7,3)
      COMMON /RESLT/TT(240,3),DELA(240,3),PRT(50),QUEUE(240)
      COMMON /SHIFT/ NS,SHFPCT(50,2,4)
      COMMON R(240),C(240),RG(10,240),CG(10,240)
      INTEGER R,RG
      COMMON NTO(50,15),NTD(50,15),OV(50,11),VD(50,11)
      COMMON MATRIX(10,50)
      DIMENSION HEAD1(4),HEAD2(4),HEAD3(8),HEAD4(8)
      DIMENSION ICAT(15),ICPT(15)
      COMMON LUDV(7,10)
      DIMENSION LUA(7,1)
      COMMON ALUA(7,7),RSUM(7),CSUM(7),RSPLU(7),CSPLU(7)
      DIMENSION SNTO(50),SNTD(50)
      EQUIVALENCE(SNTO,ZGENR),(SNTD,ZATTR)
      LOGICAL GATCNT
      DATA (HEAD1(I),I=1,4)/10HC.2.  TRIP ,10HPRODUCTION,
     110HS (PERSONS,10H)         /
      DATA (HEAD2(I),I=1,4)/10HC.3.  TRIP ,10HATTRACTION,
     110HS (PERSONS,10H)         /
      DATA (HEAD3(I),I=1,8)/10HC.5.  TRIP ,10HPRODUCTION,
     110HS MODIFIED,10H BY GATE C,10HOUNTS AND ,10HSHIFT COUN,
     210HTS (PERSON,10HS)        /
      DATA (HEAD4(I),I=1,8)/10HC.6.  TRIP ,10HATTRACTION,
     110HS MODIFIED,10H BY GATE C,10HOUNTS AND ,10HSHIFT COUN,
     210HTS (PERSON,10HS)        /
      DATA TOTAL/6H TOTAL/,(LUA(I,1),I=1,7)/
     14HHOME,4HINDS,4HSHOP,4HSERV,4HEXTN,4HADMN,4HFLTL/
     2,TO/4H TO /,FROM/4HFROM/
      NLU = 7
      NDV=10
*     PRINT 3333, NZONES,NTRIP
 3333 FORMAT(1H1,2I10)
C     SUMMATION OF TRIPS PER ORIGIN AND DESTINATION ZONE
      DO 12 IZ = 1,NZONES
      SNTO(IZ) = 0.
```

```
            SNTD(IZ) = 0.
      C     SUMMATION OF TRIPS PER TRIP PURPOSE
            DO 11 K = 1,NTRIP
            NTO(IZ,K) = 0
            NTD(IZ,K) = 0
      C     SUMMATION OF TRIPS PER DEMOGRAPHIC VARIABLE
            DO 10 I = 1,4
            J = NVARO(I,K)
            IF(J.LE.0) GO TO 10
      C  IF THERE IS NO D.V. INDEX THERE IS NO TRIP GENERATION
      *     PRINT 3334, NVARO(I,K),NVARD(I,K)
      *3334 FORMAT(1H0,2I10)
      C   TEST FOR UNSPECIFIED LAND USE, ONE LAND USE, OR MULTIPLE
      C   LAND USES.  O=2 TRIP ENDS, 1=1 TRIP END,  2=2TRIP ENDS ETC.
      C
      *     IF(IZ.LE.NEXT) GO TO 100
      *     DO 1000 I1=1,4
      *     IF(LANDO(I,K).NE.LANDO(I1,K).AND.LANDO(I1,K).NE.0) GO TO 100
      *1000 CONTINUE
      C  TEST THAT ZONE HAS SPECIFIED LAND USE
            IF(LANDU(IZ).NE.LANDO(I,K).AND.LANDO(I,K).NE.0) GO TO 10
        100 NTO(IZ,K) = COEFO(I,K) * VAR(J,IZ) + NTO(IZ,K) + .5
            NTD(IZ,K) = COEFD(I,K) * VAR(J,IZ) + NTD(IZ,K) + .5
      *     PRINT 3335, COEFO(I,K),COEFD(I,K),VAR(J,IZ),VAR(J,IZ)
      *3335 FORMAT(1X,4F10.2)
       10   CONTINUE
            SNTO(IZ) = SNTO(IZ) + NTO(IZ,K)
            SNTD(IZ)=SNTD(IZ)+NTD(IZ,K)
      *     PRINT 2222, SNTO(IZ),SNTD(IZ)
       2222 FORMAT(1X,2F10.2)
       11   CONTINUE
       12   CONTINUE
      *     PRINT 9510, (ZNAME(IZ),(NTO(IZ,K),NTD(IZ,K),K=1,5),IZ=1,NZONES)
      *     INITIALIZE POINTER TO PLUALU ARRAY
            IPA=2
            IF(TOD.LT.1100) IPA=1
            IF(TOD.LE.100..OR.TOD.GT.1300.) IPA=3
            IF(NTRIP.LT.2) GO TO 130
      *     IF THE USER SPECIFIED ONLY ONE TRIP END FOR
      *     A TRIP PURPOSE K, THEN THE PLUALU ARRAY IS USED
      *     TO FIND THE OTHER TRIP ENDS.
      *
      *     INITIALIZE ALUA COLUMN SUM AND ROW SUM ARRAYS
            DO 1201 LU=1,NLU
            CSPLU(LU)=0.
            RSPLU(LU)=0.
            RSUM(LU)=0.
       1201 CSUM(LU)=0.
            DO 1202 LU=1,NLU
            DO 1202 L1=1,NLU
            ALUA(L1,LU)=0.0
            CSPLU(LU)=CSPLU(LU)+PLUALU(L1,LU,IPA)
       1202 RSPLU(L1)=RSPLU(L1)+PLUALU(L1,LU,IPA)
      *     INITIALIZES ALUA ARRAY WITH INPUT PROD AND ATTR
      *     NOTE THAT ATTR ARE GIVEN PRECEDENCE.
```

```
            DO 12031 IZ=1,NZONES
            LU=LANDU(IZ)
            DO 12031 K=2,NTRIPC
            DO 1203 L1=1,NLU
            IF(CSPLU(LU).NE.0.0)
           1ALUA(L1,LU)=NTD(IZ,K)*PLUALU(L1,LU,IPA)/CSPLU(LU)+ALUA(L1,LU)
 1203       CONTINUE
            CSUM(LU)=CSUM(LU)+NTD(IZ,K)
12031       RSUM(LU)=RSUM(LU)+NTD(IZ,K)
*           FILL IN PROD INTO THE ALUA ARRAY.
*           FIRST GET THE ROW SUMS OF ATTR IN ALUA ARRAY
            DO 12041 L1=1,NLU
            ASUM = 0.0
            PSUM=0.0
            DO 1204 LU=1,NLU
            IF(ALUA(L1,LU).EQ.0.0) GO TO 1204
            ASUM=ASUM+ALUA(L1,LU)
            PSUM=PSUM+PLUALU(L1,LU,IPA)
 1204       CONTINUE
            DO 12041 LU=1,NLU
            IF(ALUA(L1,LU).EQ.0.0 .AND.RSPLU(L1).NE.PSUM.AND. RSUM(L1).NE.0.0)
           1 ALUA(L1,LU)=(RSUM(L1)-ASUM)*PLUALU(L1,LU,IPA)/(RSPLU(L1)-PSUM)
12041       CONTINUE
*           USE AVERAGE FROM TWO DIRECTIONS TO FILL OTHER ELEMENTS
            DO 1205 LU=1,NLU
            RSUM(LU)=0.
            CSUM(LU)=0.
            CSPLU(LU)=0.
 1205       RSPLU(LU)=0.
*           SUM NON-ZERO ELEMENTS OF EACH ARRAY
            DO 1206 LU=1,NLU
            DO 1206 L1=1,NLU
            IF(ALUA(L1,LU).EQ.0.)GO TO 1206
            CSUM(LU)=CSUM(LU)+ALUA(L1,LU)
            CSPLU(LU)=PLUALU(L1,LU,IPA)+CSPLU(LU)
            RSUM(L1)=RSUM(L1)+ALUA(L1,LU)
            RSPLU(L1)=RSPLU(L1)+PLUALU(L1,LU,IPA)
 1206       CONTINUE
*           PROPORTION BLANKS IN ALUA TO THE PLUALU ARRAY
            DO 1207 LU=1,NLU
            DO 1207 L1=1,NLU
             IF(ALUA(L1,LU).NE.0.0) GO TO 1207
            IF(RSPLU(L1).NE.0.0) ALUA(L1,LU)=PLUALU(L1,LU,IPA)*RSUM(L1)/
           1 RSPLU(L1)*.5
            IF(CSPLU(LU).NE.0.0) ALUA(L1,LU)=ALUA(L1,LU)+PLUALU(L1,LU,IPA)*
           1 CSUM(LU)/CSPLU(LU)*.5
 1207       CONTINUE
*           RECALCULATE SUMS
            RSUM(LU)=0.0
            CSUM(LU)=0.0
            DO 1208 LU=1,NLU
            DO 1208 L1=1,NLU
            IF(ALUA(L1,LU).LT.0.0) ALUA(L1,LU)=0.0
            RSUM(L1)=RSUM(L1)+ALUA(L1,LU)
 1208       CSUM(LU)=CSUM(LU)+ALUA(L1,LU)
```

```
      IF(IPFLG(1).LT.1) GO TO 91211
      PRINT 91208, (BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
     1TODS,TODE
91208 FORMAT(1H1,2A10,A3,7X,I2,1H/,I2,1H/,I2,5X5A10,6X,
     112HPERIOD FROM F5.0,4H TO F5.0,6H HOURS)
      PRINT 91209, (LUA(I,1),I=1,NLU)
91209 FORMAT(1H-,40X,*C.1. ARRAY OF LAND USE PRODUCTIONS AND *,
     1*ATTRACTIONS*//35X,*FROM/TO*,4X,7A6)
      PRINT 91210,(LUA(I,1),(ALUA(I,LI),LI=1,NLU),I=1,NLU)
91210 FORMAT(1H-,36X,A4,5X,7F6.0)
91211 DO 127 K = 2, NTRIPC
C  TEST IF MORE THAN ONE LAND USE IS SPECIFIED
      IF (LANDO(1,K) .EQ. 0) GO TO 127
      DO 121 J = 2, 4
      IF (LANDO(J,K) .EQ. 0 .AND. NVARO(J,K).EQ.0) GO TO 122
      IF (LANDO(J,K) .NE. LANDO(1,K)) GO TO 127
  121 CONTINUE
C
*  ONE LAND USE - DO DEFAULT GENERATION
  122 DO 123 IDV = 1, NDV
C
C  CALCULATE VALUE OF EACH DV FOR ALL ZONES WITH SAME LAND USE
      DO 123 LU = 1, NLU
      LUDV(LU,IDV) = 0
      DO 123 IZ = 1,NZONES
      IF (LANDU(IZ) .EQ. LU) LUDV(LU,IDV) = LUDV(LU,IDV)
     1  + VAR(IDV,IZ)
  123 CONTINUE
C  ELIMINATE NTO TRIPS WHICH WILL APPEAR UNDER ALTERNATIVE PURPOSE
C  TRIP PRODUCTIONS
      DO 124 IZ=1,NZONES
 124  NTO(IZ,K)=0
      LU = LANDO(1,K)
      DO 126 IZ = 1, NZONES
      IZLU = LANDU(IZ)
*
*
*  CALCULATE THIS ZONE'S AVERAGE PORTION OVER ALL DV'S FOR THIS LU
      KNZ = 0
      VARZDV = 0.
      DO 125 IDV = 1, NDV
      IF ( LUDV(IZLU,IDV) .EQ. 0.) GO TO 125
      KNZ = KNZ + 1
      VARZDV = VARZDV + (VAR(IDV,IZ)/LUDV(IZLU,IDV))
  125 CONTINUE
      IF(KNZ.NE.0)VARZDV = VARZDV / KNZ
*
*  RECALCULATE NTO AND NTD
      IF(NTO(IZ,K).EQ.0) NTO(IZ,K)=VARZDV*ALUA(IZLU,LU)+.5
      IF(NTD(IZ,K).EQ.0.AND.LU.EQ.IZLU.AND.(NVARO(1,K).EQ.0.OR.COEFD
     1(1,K).EQ.0.)) NTD(IZ,K)=VARZDV*CSUM(LU)+.5
  126 CONTINUE
C  THE TRIPS WITH ONE END GENERATED SHOULD CAUSE NO FURTHER
C  GENERATIONS, SO 0.0 PUT IN ALUA ARRAY AND FUTURE TRIPS WILL
C  THEN BE ZERO
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```
      *      IF(COEFO(1,K).EQ.0.0) GO TO 1263
      *      DO 1262 IZLU=1,NLU
      *1262 ALUA(LU,IZLU)=0.0
      *1263 IF(COEFD(1,K).EQ.0.0) GO TO 1265
      *      DO 1264 IZLU=1,NLU
      *1264 ALUA(IZLU,LU)=0.0
      *1265 CONTINUE
        127 CONTINUE
            IF(IPFLG(1).LT.1) GO TO 130
            TODT=TOD+100.*TP/3600.
            PRINT 91208, (BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
           1TOD,TODT
            PRINT 9500, (HEAD1(I),I=1,4),FROM,(PURP(K),K=1,NTRIP),TOTAL
            ICPTS=0
            ICATS=0
            DO 1282 K=1,NTRIP
            ICPT(K)=0
            ICAT(K)=0
            DO 1281 IZ=1,NZONES
            ICPT(K)=NTO(IZ,K)+ICPT(K)
            ICAT(K)=NTD(IZ,K)+ICAT(K)
       1281 CONTINUE
            ICPTS=ICPTS+ICPT(K)
            ICATS=ICATS+ICAT(K)
       1282 CONTINUE
            DO 128 IZ=1,NZONES
            ISNTO=0.0
            DO 1283 K=1,NTRIP
       1283 ISNTO=NTO(IZ,K)+ISNTO
            PRINT 9510,ZNAME(IZ),LUA(LANDU(IZ),1),(NTO(IZ,K),K=1,NTRIP)
           1,ISNTO
        128  CONTINUE
            PRINT 9512, (ICPT(K),K=1,NTRIP),ICPTS
            PRINT 91208, (BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
           1TOD,TODT
            PRINT 9500,(HEAD2(I),I=1,4),TO,(PURP(K),K=1,NTRIP),TOTAL
            DO 129 IZ=1,NZONES
            ISNTD=0.0
            DO 1284 K=1,NTRIP
       1284 ISNTD=NTD(IZ,K)+ISNTD
             PRINT 9510,ZNAME(IZ),LUA(LANDU(IZ),1),(NTD(IZ,K),K=1,NTRIP)
           1,ISNTD
        129  CONTINUE
            PRINT 9512, (ICAT(K),K=1,NTRIP),ICATS
      *
      *  TEST FOR SHIFT COUNTS
        130  SFTO = 0.
            SFTD = 0.
             FNS1=1.0
             SSNTO=0.
             SSNTD=0.
            DO 131 K=1,NTRIP
             DO 131 IZ=NEXT1,NZONES
             SSNTO=NTO(IZ,K)+SSNTO
        131  SSNTD=NTD(IZ,K)+SSNTD
```

```
      C       'TEST FOR 15 MIN TIME PERIOD TO BE SIMULATED.'
              IF(IOPT(4).EQ.0)GO TO 20
              FNS1=4.0
      C      'THE FLEX TIME POOL INCLUDES ALL TRIPS'
              DO 13 IZ = NEXT1, NZONES
              SFTO = SFTO + NTO(IZ,1)
           13 SFTD = SFTD + NTD(IZ,1)
      *
      *  COMPUTE FLEX TIME POOL
              TSHO = 0.
              TSHD = 0.
              IF(NS.EQ.0)GO TO 133
              DO 132 IZ = NEXT1,NZONES
              DO 132 I = 1, 4
              TSHO = TSHO + SHFPCT(IZ,1,I)
          132 TSHD = TSHD + SHFPCT(IZ,2,I)
          133   CONTINUE
              SFTO=AMAX1(SFTO-TSHO,0.0)
              SFTD=AMAX1(SFTD-TSHD,0.0)
      C
      C  TEST FOR THE AVAILABILITY OF 15 MINUTE GATE COUNTS
          134 IF (IOPT(4).EQ.2) GO TO 137
              DO 136 IG = 1, NGATE
              DO 136 J=1,2
              TGATEC = 0.
              DO 135 I = 1, 4
          135 TGATEC = TGATEC + GCNT15(IG,J,I)
              IF (TGATEC .EQ. GCOUNT(J,IG)) GO TO 136
              PRINT 9135, IG
              STOP135
         9135 FORMAT(35H FIFTEEN MINUTE GATE COUNTS AT GATE  I3,
            1 29H  DO NOT SUM TO HOURLY COUNTS )
          136 CONTINUE
              GATCNT = .TRUE.
      *
      *  CALL GRAVO AND GATFUN IF THIS IS THE FIRST ITERATION
              IF(ITM.EQ.1)CALL GRAVE
              CALL GATFUN
              GO TO 138
      *
      *  15 MINUTE GATE COUNTS NOT AVAILABLE
          137 GAFRO = 1. / FNS1
              GAFRD = 1. / FNS1
              GATCNT=.FALSE.
          138 SNTSHO = 0.
              SNTSHD = 0.
      C       'COMPUTE THE SUM OF THE NTO MINUS SHIFT PRODUCTIONS
      C       OR NTO MINUS SHIFT ATTRACTIONS IN AN HOUR.SFTO IS THE
      C       THING BUT NEGATIVE FLEX TRIPS TO EACH ZONE ARE ELIMINATED
      C       FROM SNTSHO.'

              DO 14 IZ = NEXT1, NZONES
              TSHFPO = 0.
              TSHFPD = 0.
              DO 139 I = 1, 4
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      TSHFPO = TSHFPO + SHFPCT(IZ,1,I)
  139 TSHFPD = TSHFPD + SHFPCT(IZ,2,I)
      SNTSHO = SNTSHO + AMAX1(NTO(IZ,1) - TSHFPO, 0.0)
   14 SNTSHD = SNTSHD + AMAX1(NTD(IZ,1) - TSHFPD, 0.0)
      IF(IPFLG(1).LT.1) GO TO 1405
      PRINT 91206,BAT,NYR,NMO,NDAY,(LHEAD(I),I=1,5),TODS,TODE
      PRINT 914,(IG, IG=1,10)
  914 FORMAT(1H05X,*C.4.  MATRIX ASSOCIATING ZONES WITH GATES*
     1 /5HOZONE,4X,10(4HGATE,I2,4X))
      PRINT 9140,(ZNAME(IZ),(MATRIX(IG,IZ),IG=1,10),IZ=NEXT1,NZONES)
 9140 FORMAT(2XA2,10I10)
 1405 CONTINUE
      DO 144 IZ = NEXT1, NZONES
      IF (IOPT(4) .EQ. 2 .OR. .NOT. GATCNT) GO TO 142
      GC15O = 0.
      GC15D = 0.
      GCHRO = 0.
      GCHRD = 0.
      DO 141 IG = 1, NGATE
C      'TEST MATRIX ASSOCIATING GATES WITH ZONES'
      IF (MATRIX(IG,IZ) .EQ. 0) GO TO 141
      GC15O = GC15O + GCNT15(IG,1,ITM)
      GCHRO = GCHRO + GCOUNT(1,IG)
      GC15D = GC15D + GCNT15(IG,2,ITM)
      GCHRD = GCHRD + GCOUNT(2,IG)
  141 CONTINUE
C  GATE FRACTION OF HOURLY COUNT
      IF(GCHRO.NE.0.) GAFRO = GC15O / GCHRO
      IF(GCHRD.NE.0.) GAFRD = GC15D / GCHRD
  142 TSHFPO = 0.
      TSHFPD = 0.
      DO 143 I = 1,4
      TSHFPO = TSHFPO + SHFPCT(IZ,1,I)
  143 TSHFPD = TSHFPD + SHFPCT(IZ,2,I)
C      'FRAC IS THE FRACTION OF ALL FLEX TRIPS TO BE ROUTED
C      TO IZ. THE FLEX POOL IS SFTO.GAFRO IS THE FRACTION
C      OF TRIPS ARRIVING IN 15 MINUTES.'.
      FRAC=0.0
      IF(SNTSHO.NE.0.0)
     * FRAC = AMAX1(NTO(IZ,1) - TSHFPO, 0.) / SNTSHO
      NTO(IZ,1) = FRAC * SFTO * GAFRO + SHFPCT(IZ,1,ITM)+.5
      FRAC=0.0
      IF(SNTSHD.NE.0.0)
     * FRAC = AMAX1(NTD(IZ,1) - TSHFPD, 0.) / SNTSHD
      NTD(IZ,1) = FRAC * SFTD * GAFRD + SHFPCT(IZ,2,ITM)+.5
  144 CONTINUE
C  MODIFY THE HOME-WORK TRIPS BY SHIFT ARRIVAL AND DEPARTURE PERCENTAGES.
C  USE GATE COUNTS TO PROPORTION ALL EXTERNAL AND NON-WORK TRIPS
      IF(.NOT. GATCNT) GO TO 152
      GC15O = 0.
      GC15D = 0.
      GCHRO = 0.
      GCHRD = 0.
      DO 151 IG = 1, NGATE
      GC15O = GC15O + GCNT15(IG,1,ITM)
```

```
          GCHRO = GCHRO + GCOUNT(1,IG)
          GC15D = GC15D + GCNT15(IG,2,ITM)
          GCHRD = GCHRD + GCOUNT(2,IG)
  151 CONTINUE
C GATE FRACTION OF HOURLY COUNT
      IF(GCHRO.NE.O.) GAFRO = GC15O / GCHRO
      IF(GCHRD.NE.O.) GAFRD = GC15D / GCHRD
  152 CONTINUE
      DO 16 IZ=1,NEXT
      DO 16 K=1,NTRIP
      NTO(IZ,K)=NTO(IZ,K)*GAFRD+.5
      NTD(IZ,K)=NTD(IZ,K)*GAFRO+.5
   16 CONTINUE
      IF(NTRIP.LE.1)GO TO 18
C      'UPDATE FOR 15 MINUTE TIME PERIODS'
      DO 17 IZ=NEXT1,NZONES
      DO 17 K=2,NTRIP
      NTO(IZ,K)=NTO(IZ,K)*GAFRO+.5
   17 NTD(IZ,K)=NTD(IZ,K)*GAFRD+.5
C
C     'RECALCULATE SNTO,SNTD,NTO AND NTD.'
   18 DO 19 IZ=1,NZONES
      SNTO(IZ) = 0.
      SNTD(IZ) = 0.
      DO 19 K = 1, NTRIP
      SNTO(IZ) = SNTO(IZ) + NTO(IZ,K)
   19 SNTD(IZ) = SNTD(IZ) + NTD(IZ,K)
C     SUMMATION OF TOTAL TRIPS ATTRACTED AND GENERATED
C     FOR ALL ZONES
   20 CONTINUE
*     PRINT 2223, SSNTO,SSNTD
*2223 FORMAT(1X,2F10.2)
C     MODIFICATION OF ATTRACTION AND PRODUCTION ARRAYS
C     TO CONFORM TO TOTAL TRIPS ATTRACTED TO (TOTATT) AND
C     GENERATED FROM (TOTGEN) THE BASE INTERIOR ZONES.
*     PRINT 3336, TOTATT, TOTGEN
*3336 FORMAT(1X,2F10.2)
      IF (TOTGEN.LE.O.O.AND.TOTATT.LE.O.) GO TO 23
      DO 22 IZ = NEXT1,NZONES
      DO 21 K = 1,NTRIP
      IF (TOTGEN.GT.O.)
     1NTO(IZ,K) = NTO(IZ,K) * (TOTGEN/SSNTO)
      IF (TOTATT.GT.O.)
     1NTD(IZ,K) = NTD(IZ,K) * (TOTATT/SSNTD)
   21 CONTINUE
   22 CONTINUE
   23 CONTINUE
C     'UPDATE SUMS OF TRIPS PER ZONE'
    3 DO 38 IZ = 1,NZONES
      SNTO(IZ) = 0
      SNTD(IZ) = 0
      DO 35 K = 1,NTRIP
      SNTO(IZ) = SNTO(IZ) + NTO(IZ,K)
      SNTD(IZ) = SNTD(IZ) + NTD(IZ,K)
   35 CONTINUE
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```
*          PRINT 2227, SNTO(IZ),SNTD(IZ)
    2227   FORMAT(1X,2F10.2)
      38   CONTINUE
C          FCSP IS FRACTION BY PURPOSE.  FCS(IZ) IS FRACTION ASSOCIATED
C          WITH EACH ZONE.
C          GENERATION OF FCS TABLE
           DO 42 IZ = 1,NZONES
           TFCSO=0
C          SUM TRIPS X COLD START FRACTION OVER TOT TRIPS PER PURP
           DO 41 K = 1,NTRIP
C          PRINT 1, IFCSIZ(K)
C1         FORMAT(1X,I3)
           IF(IFCSIZ(K).NE.0) GO TO 41
*          PRINT 5555, FCSP(K,1),FCSP(K,2),SNTO(IZ),SNTD(IZ)
           IF(SNTO(IZ).LE.0.) GO TO 41
*5555      FORMAT(1X,4F10.2)
           IF(IZ.GT.NEXT) GO TO 40
           TFCSO = (NTO(IZ,K) * FCSP(K,1))/SNTO(IZ) + TFCSO
           GO TO 41
      40   TFCSO = (NTO(IZ,K) * FCSP(K,2))/SNTO(IZ) + TFCSO
      41   CONTINUE
           FCS(IZ) = TFCSO
      42   CONTINUE
C          OUTPUT TRIP PRODUCTION AND GENERATION TABLES IF INDICATED
*          PRINT 9876, IFL
*9876      FORMAT(1X,I4)
           PRINT 91208, (BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
          1TODS,TODE
           PRINT 9513, (HEAD3(I),I=1,8),FROM,(PURP(K),K=1,NTRIP),TOTAL
           ICPTS=0
           ICATS=0
           DO 550 K=1,NTRIP
           ICPT(K)=0
           ICAT(K)=0
           DO 551 IZ=1,NZONES
           ICPT(K)=NTO(IZ,K)+ICPT(K)
           ICAT(K)=NTD(IZ,K)+ICAT(K)
     551   CONTINUE
           ICPTS=ICPTS+ICPT(K)
           ICATS=ICATS+ICAT(K)
     550   CONTINUE
           DO 50 IZ = 1,NZONES
           ISNTO=SNTO(IZ)
           PRINT 9510, ZNAME(IZ),LUA(LANDU(IZ),1),(NTO(IZ,K),K=1,NTRIP)
          1,ISNTO
      50    CONTINUE
           PRINT 9512, (ICPT(K),K=1,NTRIP),ICPTS
           PRINT 91208, (BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
          1TODS,TODE
           PRINT 9513, (HEAD4(I),I=1,8),TO,(PURP(K),K=1,NTRIP),TOTAL
           DO 52 IZ = 1,NZONES
           ISNTD=SNTD(IZ)
           PRINT 9510, ZNAME(IZ),LUA(LANDU(IZ),1),(NTD(IZ,K),K=1,NTRIP)
          1,ISNTD
      52    CONTINUE
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            PRINT 9512, (ICAT(K),K=1,NTRIP),ICATS
C           OUTPUT FRACTION COLD STARTT TABLE IF INDICATED
500         IF(IPFLG(1).LT.4) GO TO 600
            PRINT 91208, (BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
           1TODS,TODE
            PRINT 9530
            DO 53 IZ = 1,NZONES
            PRINT 9531, ZNAME(IZ),FCS(IZ)
   53       CONTINUE
 9500       FORMAT(1HO5X,4A10/1HO,A4,6X,*PURPOSE*/* ZONE USE*
           116(1X,A6))
 9510       FORMAT(2X,A2,1X,A4,16I7)
 9512       FORMAT(1X,* TOTAL    *,16I7)
 9513       FORMAT(1HO5X,8A10/1HO,A4,6X,*PURPOSE*/* ZONE USE*
           116(1X,A6))
 9530       FORMAT(1HO//8X,19HCOLD START FRACTION//10X,4HZONE,
           18X,3HFCS//)
 9531       FORMAT(12X,A2,6X,F7.2)
  600       RETURN
            END
```

SYMBOLIC REFERENCE MAP

ENTRY POINTS
1 TRIPGEN

VARIABLES SN		TYPE		RELOCATION					
20402	ALUA	REAL	ARRAY	/ /	3306	ASUM	REAL		
2	BAT	REAL	ARRAY	CHD	360	C	REAL	ARRAY	/ /
5500	CG	REAL	ARRAY	/ /	361	COEFD	REAL	ARRAY	TRIP
171	COEFG	REAL	ARRAY	TRIP	20510	CSPLU	REAL	ARRAY	/ /
20472	CSUM	REAL	ARRAY	/ /	1320	DELA	REAL	ARRAY	RESLT
6	DOW	REAL		COMM	1	DVNAME	REAL	ARRAY	DEMVAR
2122	FCS	REAL	ARRAY	ZONES	1	FCSP	REAL	ARRAY	TRIP
50	FEXATT	REAL	ARRAY	COMM	44	FEXGEN	REAL	ARRAY	COMM
60	FINATT	REAL	ARRAY	COMM	54	FINGEN	REAL	ARRAY	COMM
3324	FNS1	REAL			3345	FRAC	REAL		
2742	FRAMIL	REAL	ARRAY	ZONES	3151	FROM	REAL		
3334	GAFRD	REAL			3333	GAFRO	REAL		
3300	GATCNT	LOGICAL			3344	GCHRD	REAL		
3343	GCHRO	REAL			171	GCNT15	REAL	ARRAY	GATE
145	GCOUNT	REAL	ARRAY	GATE	3342	GC15D	REAL		
3341	GC15O	REAL			3347	HEAD1	REAL	ARRAY	
3353	HEAD2	REAL	ARRAY		3357	HEAD3	REAL	ARRAY	
3367	HEAD4	REAL	ARRAY		0	I	INTEGER		COMM
3377	ICAT	INTEGER	ARRAY		3317	ICATS	INTEGER		
3416	ICPT	INTEGER	ARRAY		3316	ICPTS	INTEGER		
3311	IDV	INTEGER			37	IFCSIZ	INTEGER	ARRAY	TRIP
3331	IG	INTEGER			31	IOPT	INTEGER	ARRAY	COMM
3303	IPA	INTEGER			24	IPFLG	INTEGER	ARRAY	COMM
3321	ISNTD	INTEGER			3320	ISNTO	INTEGER		
13	ITM	INTEGER		COMM	3302	IZ	INTEGER		
3312	IZLU	INTEGER			3	J	INTEGER		COMM
4	K	INTEGER		COMM	3313	KNZ	INTEGER		
2	L	INTEGER		COMM	552	LANDD	INTEGER	ARRAY	TRIP
456	LANDO	INTEGER	ARRAY	TRIP	3107	LANDU	INTEGER	ARRAY	ZONES
1	LGATE	INTEGER	ARRAY	GATE	15	LHEAD	INTEGER	ARRAY	COMM
3310	LI	INTEGER			3304	LU	INTEGER		
3435	LUA	INTEGER	ARRAY		20274	LUDV	INTEGER	ARRAY	/ /
3305	L1	INTEGER			17310	MATRIX	INTEGER	ARRAY	/ /
40	NCLB	INTEGER		COMM	7	NDAY	INTEGER		CHD
42	NDEMVC	INTEGER		COMM	0	NDV	INTEGER		DEMVAR
1357	NEXT	INTEGER		ZONES	3106	NEXT1	INTEGER		ZONES
0	NGATE	INTEGER		GATE	311	NGATE1	INTEGER		GATE
3301	NLU	INTEGER			6	NMO	INTEGER		CHD
43	NNAME	INTEGER		COMM	37	NPLT	INTEGER		COMM
41	NPLU	INTEGER		COMM	0	NS	INTEGER		SHIFT
13616	NTD	INTEGER	ARRAY	/ /	12240	NTO	INTEGER	ARRAY	/ /
0	NTRIP	INTEGER		TRIP	455	NTRIPC	INTEGER		TRIP
265	NVARD	INTEGER	ARRAY	TRIP	75	NVARO	INTEGER	ARRAY	TRIP
14	NYEAR	INTEGER		COMM	5	NYR	INTEGER		CHD
1	NZLINKS	INTEGER	ARRAY	ZONES	0	NZONES	INTEGER		ZONES
15174	OV	REAL	ARRAY	/ /	646	PLUALU	REAL	ARRAY	TRIP
2640	PRT	REAL	ARRAY	RESLT	3307	PSUM	REAL		
56	PURP	REAL	ARRAY	TRIP	2722	QUEUE	REAL	ARRAY	RESLT

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      SUBROUTINE  TRIPGEN   TRACE                              CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE     12

VARIABLES       SN  TYPE           RELOCATION
     0  R           INTEGER    ARRAY    / /               740  RG          INTEGER    ARRAY    / /
 20501  RSPLU       REAL       ARRAY    / /             20463  RSUM        REAL       ARRAY    / /
  3323  SFTD        REAL                                 3322  SFTO        REAL
     1  SHFPCT      REAL       ARRAY    SHIFT            1213  SNTD        REAL       ARRAY    ZONES
  1275  SNTO        REAL       ARRAY    ZONES            3336  SNTSHD      REAL
  3335  SNTSHO      REAL                                 3326  SSNTD       REAL
  3325  SSNTO       REAL                                 3346  TFCSO       REAL
  3332  TGATEC      REAL                                 3150  TO          REAL
     5  TOD         REAL                COMM                0  TODE        REAL                CHD
     1  TODS        REAL                CHD              3315  TODT        REAL
  3147  TOTAL       REAL                                   10  TOTATT      REAL                COMM
    12  TOTGEN      REAL                COMM                7  TP          REAL                COMM
    64  TP15        REAL                COMM             3330  TSHD        REAL
  3340  TSHFPD      REAL                                 3337  TSHFPO      REAL
  3327  TSHO        REAL                                    0  TT          REAL       ARRAY    RESLT
    11  TTPZ        REAL                COMM               13  VAR         REAL       ARRAY    DEMVAR
  3314  VARZDV      REAL                                   25  VCR         REAL       ARRAY    GATE
 16242  VD          REAL       ARRAY    / /              1364  VEHTYP      REAL       ARRAY    ZONES
  2204  VTYPM       REAL       ARRAY    ZONES              27  XP          INTEGER             COMM
    30  YP          INTEGER             COMM                1  Z           INTEGER             COMM
  1360  ZAT         REAL       ARRAY    ZONES            1213  ZATTR       REAL       ARRAY    ZONES
  1275  ZGENR       REAL       ARRAY    ZONES            1362  ZGT         REAL       ARRAY    ZONES
    63  ZLINKS      INTEGER    ARRAY    ZONES            2040  ZNAME       INTEGER    ARRAY    ZONES

FILE NAMES          MODE
      OUTPUT         FMT

EXTERNALS             TYPE    ARGS
      AMAX1         REAL       2                                GATFUN               0
      GRAVE                    0

STATEMENT LABELS
     0  3             INACTIVE           120  10                                      0  11
     0  12                                 0  13                                      0  14
     0  16                                 0  17                                   2402  18
     0  19                              2440  20                                      0  21
     0  22                              2512  23                                      0  35
     0  38                              2600  40                                   2613  41
     0  42                                 0  50                                      0  52
     0  53                                 0  100        INACTIVE                     0  121
  1011  122                                0  123                                     0  124
  1122  125                                0  126                                  1212  127
     0  128                                0  129                                  1516  130
     0  131                                0  132                                  1624  133
     0  134           INACTIVE             0  135                                  1676  136
  1716  137                             1723  138                                     0  139
  2115  141                             2132  142                                     0  143
     0  144                                0  151                                  2302  152
     0  500          INACTIVE              0  550                                     0  551
  3142  600                             3215  914   FMT                               0  1201
     0  1202                               0  1203                                  370  1204
     0  1205                             530  1206                                  621  1207
     0  1208                               0  1281                                    0  1282
     0  1283                               0  1284                                 2045  1405
```

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STATEMENT LABELS
 3154  2222    FMT  NO REFS        3231  2227    FMT  NO REFS        3152  3333    FMT  NO REFS
 3204  9135    FMT                 3226  9140    FMT                 3233  9500    FMT
 3241  9510    FMT                 3244  9512    FMT                 3247  9513    FMT
 3255  9530    FMT                 3264  9531    FMT                    0  12031
    0  12041                       3156  91208   FMT                 3167  91209   FMT
 3201  91210   FMT                  752  91211

COMMON BLOCKS   LENGTH
       COMM         53
       CHD           8
       DEMVAR      511
       ZONES      1657
       GATE        202
       TRIP        569
       RESLT      1730
       SHIFT       401
       / /        8527

STATISTICS
   PROGRAM LENGTH   3446B    1830
    COMMON LENGTH  12013B    5131
     BLANK COMMON  20517B    8527
```

```
      SUBROUTINE GRAVO
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU,NDEMVC
     2,NNAME,FEXGEN(4),FEXATT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
     1ZGENR (50), NEXT, ZAT(2), ZGT(2), VEHTYP(6,50), ZNAME(50),FCS(50)
     2,VTYPM(7,50),FRAMIL(50,2),NEXT1
      INTEGER ZLINKS,ZNAME
      COMMON /DEMVAR/ NDV,DVNAME(10),VAR(10,50)
      COMMON /TRIP/ NTRIP,FCSP(15,2),IFCSIZ(15),PURP(15), NVARO(4,15)
     1,COEFO(4,15),NVARD(4,15),COEFD(4,15),NTRIPC
      COMMON / GATE/ NGATE, LGATE(2,10), VCR(10, 2,4),GCOUNT(2,10),
     1GCNT15(10,2,4),NGATE1
      COMMON /RESLT/ TT(240,3),DELA(240,3),PRT(50),QUEUE(240)
      COMMON/PARKZ/ PZ,PV(50),PLA(50),VZ(50),ZV(50),PD,PLS,PLVO,PNOS
     1(50),PLL(50)
      INTEGER PRT
      COMMON R(240),C(240),RG(10,240),CG(10,240)
      INTEGER R,RG
      COMMON NTO(50,15),NTD(50,15),OV(50,11),VD(50,11)
      COMMON /CHD/ TODE,TODS,BAT(3),NYR,NMO,NDAY
      EQUIVALENCE(FP,FRAMIL(1,1)),(FA,FRAMIL(1,2))
      DIMENSION FP(50),FA(50),ARRAY(50,50),ZNAM(50)
      INTEGER ARRAY,ZNAM
      COMMON   CGO(10), CGD(10), FSOD1(10), TDSUM(15)
      COMMON TOSUM(15),FSOD2(15)
C THE GRAVO SUB-MODEL WILL DISTRIBUTE TRIPS FROM AN ORIGIN ZONE,IZ, TO
C A DESTINATION ZONE,IZ1, THROUGH GATES IG.  THE COST TO TRAVEL FROM
C ANY LINK TO ANY GATE IS STORED IN THE CG(IG,L) ARRAY.  THE COST IS
C ASSUMED EQUAL WHETHER TRAVELING FROM L TO IG OR FROM IG TO L.
C
      ING = IPFLG(2)
C
      GO TO 1
      ENTRY GRAVE
      ING=-1
    1 CONTINUE
       IORE = 2
       NZ1 = NZONES
C  INITIALIZE A GATE COUNT SUM EXITING-1 AND ENTERING-2
      SGCO1=0.
      SGCO2=0.
      DO 11 IZ=1,NZONES
      DO 11 IG = 1,NGATE1
      VD(IZ,IG)=0.
   11 OV(IZ,IG)=0.
      DO 110 IG=1,NGATE
      SGCO1=SGCO1+GCNT15(IG,1,ITM)
      SGCO2=SGCO2+GCNT15(IG,2,ITM)
  110 CONTINUE
      IF (SGCO1.LE.O.) SGCO1=1.0
      IF (SGCO2.LE.O.) SGCO2=1.0
C     SUM ALL TRIPS ATTRACTED TO DESTINATION ZONES BY TRIP PURPOSE
C
```

```
      DO 12  K = 1,NTRIP
      TOSUM(K)=0.
       TDSUM( K) = 0
       DO 12  IZ1 = NEXT1,NZ1
CTOTAL TRIPS ORIGINATING ON THE BASE
      TOSUM(K)=TOSUM(K)+NTO(IZ1,K)
 12    TDSUM( K) =  TDSUM(K) +  NTD(IZ1,K)
C  TRIPS ORIGINATING OFF BASE
      SUMXO=0.
      SUMXD=0.
      DO 125 IZ=1,NEXT
      SUMXO=NTO(IZ,1)+SUMXO
 125  SUMXD=NTD(IZ,1)+SUMXD
C
C  MAIN LOOP TO COMPUTE INITIAL NUMBER FROM IZ TO ALL DESTINATION ZONES
C
       DO 47  IZ = 1,NEXT
       DO 46  IZ1 = NEXT1,NZ1
      ZGT(2)  = 0.0
C
C  FIND THE COSTS GOING FROM IZ TO ALL GATES AND FROM ALL GATES TO IZ1
      DO 14  IG = 1,NGATE
      CGO(IG) = 1.0E10
      NZL = NZLINKS(IZ)
      DO 13  J = 1, NZL
      L = ZLINKS(J, IZ)
      IF (L.LE.0) GO TO 13
      ZTT=PV(IZ)
      IF (J.LE.2) ZTT=PLA(IZ)
      IF ((CG(IG,L)+ZTT).LT. CGO(IG))  CGO(IG) =ZTT+ CG(IG,L)
 13   CONTINUE
      CGD(IG) = 1.0E10
      NZL = NZLINKS(IZ1)
      DO 14  J = 1, NZL
      L  = ZLINKS (J,IZ1)
      IF ( L.LE.0) GO TO 14
      IF (CG(IG,L) .LT. CGD(IG)) CGD(IG) = CG(IG,L)
      IF(CGD(IG).LE.0..OR.CGO(IG).LE.0.) PRINT 914,IG,IZ,CGO(IG)
     1,IZ1,CGD(IG),L
 914   FORMAT(16H GRAVO ERROR IG=I3,5H  IZ=I3,6H  CGO=F9.0,6H  IZ1=I3,
     1 6H  CGD=F9.0,4H  L=I3)
 14   CONTINUE
C
C  THE NUMBER GOING BETWEEN ORIGIN AND DESTINATION FOR PURPOSE K, IS PRO-
C     PORTIONAL TO THE FRACTION OF THE TRIPS TO ALL DESTINATION ZONES
C     FOR PURPOSE K.
C    CORRECT H-W TRIPS IF PROD .NE. ATTR
C    INTERIOR H-W TRIPS ARE ASSUMED CORRECT
      ZAT(1)=0.
      ZGT(2)=0.
      IF(TDSUM(1).NE.0.) ZGT(2)=NTO(IZ,1)*NTD(IZ1,1)/TDSUM(1)
      IF(TOD.LE.1200) ZGT(2)=ZGT(2)*AMAX1(1.0,(TDSUM(1)-TOSUM(1)+SUMXD)
     1 /SUMXO)
      IF(TOSUM(1).NE.0.) ZAT(1)=NTO(IZ,1)*NTO(IZ1,1)/TOSUM(1)
      IF(TOD.GT.1200) ZAT(1)=ZAT(1)*AMAX1(1.0,(TOSUM(1)-TDSUM(1)+SUMXO)
```

```
      1 /SUMXD)
C
      DO 15 K=2,NTRIP
      IF(TDSUM(K).NE.0.) ZOT(2)=ZOT(2)+NTO(IZ,K)*NTD(IZ1,K)/TDSUM(K)
      IF(TOSUM(K).NE.0.) ZAT(1)=ZAT(1)+NTD(IZ,K)*NTO(IZ1,K)/TOSUM(K)
   15 CONTINUE
C
C  FIND AN ALTERNATE ROUTE IZ TO IZ1 THAT DOES NOT GO THRU GATE IG, USED
C  WHEN GATES DO NOT PROVIDE A COMPLETE COUNT OF IN-OUT MOVEMENTS.
    2 CONTINUE
C
C  DISTRIBUTE TRIPS USING THE OD DEMAND VOLUME, GATE VOLUME, AND AN
C     INVERSE FUNCTION OF TRAVEL TIME
      SFSOD1 = 0.0
      SFSOD2=0.
C
      DO 31  IG = 1,NGATE
      CGT=(CGO(IG)+CGD(IG)**XP)**YP
      FSOD1(IG)=GCNT15(IG,1,ITM)/CGT
      FSOD2(IG)=GCNT15(IG,2,ITM)/CGT
      IF(FSOD1(IG).LT.0.0)FSOD1(IG)=SGCO1/NGATE/CGT
      IF(FSOD2(IG).LT.0.0)FSOD2(IG)=SGCO2/NGATE/CGT
      SFSOD1=FSOD1(IG)+SFSOD1
   31 SFSOD2=FSOD2(IG)+SFSOD2
      DO 32  IG = 1, NGATE
      VD (IZ1, IG) = VD(IZ1,IG) +ZOT(2) *FSOD2(IG)/ SFSOD2
      VD(IZ,IG)=VD(IZ,IG)+ZAT(1)*FSOD1(IG)/SFSOD1
      OV(IZ1,IG)=OV(IZ1,IG)+ZAT(1)*FSOD1(IG)/SFSOD1
   32 OV (IZ, IG)  = OV( IZ, IG) +ZOT(2) * FSOD2(IG)/ SFSOD2
   45 CONTINUE
C   FINISH IZ1 --DESTINATION ZONE LOOP
   46 CONTINUE
C   FINISH IZ  --ORIGIN ZONE LOOP
   47 CONTINUE
C  TEST IF GRAVO WAS CALLED FROM TRIPGEN FOR OV AND VD INITIALIZATION
      IF(INO.LT.0) GO TO 89
C   UPDATE THE NTO AND NTD ARRAYS TO REPRESENT WORK TRIPS
      DO 475 IZ=1,NEXT
      IF(TOD.LE.1200.)NTO(IZ,1)=NTO(IZ,1)*AMAX1(1.0,(TDSUM(1)-TOSUM(1)
     1 +SUMXD)/SUMXO)
      IF(TOD.GT.1200.)NTD(IZ,1)=NTD(IZ,1)*AMAX1(1.0,(TOSUM(1)-TDSUM(1)
     1 +SUMXO)/SUMXD)
  475 CONTINUE
C
C  ACCUMULATE INTERNAL TO INTERNAL TRIPS AT END OF OV AND VD ARRAYS
C
      DO 485 K=1,NTRIP
      SNTO=0.
      SNTD=0.
      DO 48 IZ=1,NEXT
      SNTO =SNTO+NTO(IZ,K)
   48 SNTD=SNTD+NTD(IZ,K)
      DO 483 IZ1=NEXT1,NZONES
C  TOSUM IS THE TOTAL TRIPS ORIGINATING ON THE BASE FOR TRIP PURPOSE K.
      IF (TOSUM(K)-SNTD.LE.0.) NTO(IZ1,K)=0
```

```
      IF(TOSUM(K).EQ.0.) GO TO 481
C NTO IS THE NUMBER OF TRIPS ORIGINATING ON BASE AND DESTINED ON BASE
      NTO(IZ1,K)= 0.5+NTO(IZ1,K)*(TOSUM(K)-SNTD)/TOSUM(K)
      OV(IZ1,NGATE1)=OV(IZ1,NGATE1)+NTO(IZ1,K)
  481 IF (TDSUM(K)-SNTO.LE.0.) NTD(IZ1,K)=0
      IF(TDSUM(K).EQ.0.) GO TO 485
C NTD IS THE TRIPS DESTINED ON BASE AND ORIGINATING ON BASE
      NTD(IZ1,K)= 0.5+NTD(IZ1,K)*(TDSUM(K)-SNTO)/TDSUM(K)
      VD(IZ1,NGATE1)=VD(IZ1,NGATE1)+NTD(IZ1,K)
  483  CONTINUE
      TOSUM(K)=TOSUM(K)-SNTD
      TDSUM(K)=TDSUM(K)-SNTO
  485 CONTINUE
      IF(INO.LT.2) GO TO 6
      IF(IPFLG(2).LT.1) GO TO 6
      PRINT 9999, (BAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5),
     1TODS,TODE
 9999 FORMAT(1H1,2A10,A3,7X,I2,1H/,I2,1H/,I2,5X5A10,6X12HPERIOD FROM
     1F5.0,3H TOF5.0,6H HOURS)
      PRINT 9486, (IG,IG,IG=1,NGATE1)
 9486 FORMAT(71HO D.1. ORIGIN TO GATE (OG) AND GATE TO DESTINATION (GD)
     1TRIPS (PERSONS) //7H  ZONE ,9(4H  OG,I1,4H  GD,I1),2(3H OG,I2,
     23H GD,I2))
      DO 49 IZ=1,NZONES
   49 PRINT 949, ZNAME(IZ),(OV(IZ,IG),VD(IZ,IG),IG=1,NGATE1)
  949 FORMAT(3X,A2,2X,22F5.0)
    6  IF (INO.EQ.0) GO TO 69
C  DETERMINE PRODUCTIONS FROM ALL INTERNAL ORGS IZ
C  DETERMINE FRACTION OF MILITARY FOR PERSON TRIPS
      DO 61 IZ=1,NZONES
      FP(IZ)=1.
   61 FA(IZ)=1.
      NTC=NTRIPC+1
      DO 60 IT=1,3
      IF((INO.EQ.1.OR.INO.EQ.3.OR.INO.EQ.7.OR.INO.EQ.5).AND.IT.EQ.1)
     1 GO TO 613
      IF(IT.EQ.1) GO TO 60
      IF(IT.EQ.3) GO TO 6119
      IF(NTRIPC.LE.0 .OR. NTRIPC.GE.NTRIP) GO TO 6115
      DO 611 IZ=1,NEXT
      DO 611 NT = NTC,NTRIP
      IF(ZGENR(IZ).NE.0.)
     1FP(IZ)=FP(IZ)-NTO(IZ,NT)/ZGENR(IZ)
      IF(ZATTR(IZ).NE.0.)
     1FA(IZ)=  FA(IZ)-NTD(IZ,NT)/ZATTR(IZ)
  611  CONTINUE
C DETERMINE MILITARY TRIPS FRACTION FOR INTERNAL ZONES
      DO 6111 IZ= NEXT1,NZONES
      DO 6111 NT= NTC,NTRIP
      IF(OV(IZ,NGATE1).NE.0.)FP(IZ)=FP(IZ)-NTO(IZ,NT)/OV(IZ,NGATE1)
      IF(VD(IZ,NGATE1).NE.0.)FA(IZ)=FA(IZ)-NTD(IZ,NT)/VD(IZ,NGATE1)
 6111 CONTINUE
 6115 IF((INO.EQ.2.OR.INO.EQ.6.OR.INO.EQ.3.OR.INO.EQ.7).AND.IT.EQ.2)
     1 GO TO 614
      IF(IT.EQ.2)GO TO 60
```

```
 6119 DO 612 IZ=1,NZONES
      FRAMIL(IZ,1)=1.-FP(IZ)
  612 FRAMIL(IZ,2)=1.-FA(IZ)
      IF((INO.EQ.4.OR.INO.EQ.5.OR.INO.EQ.6.OR.INO.EQ.7).AND.IT.EQ.3)
     1 GO TO 615
      GO TO 60
  613 PRINT 9999, (BAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5),
     1TODS,TODE
        PRINT 9613
      NT=NTRIP
      NT1=1
      GO TO 616
  614 PRINT 9999, (BAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5),
     1TODS,TODE
       PRINT 9614
      NT=NTRIPC
      NT1=1
      GO TO 616
  615 PRINT 9999, (BAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5),
     1TODS,TODE
       PRINT 9615
      NT=NTRIP
      NT1=NTC
C
 9613 FORMAT(42HOD.2. ORIGIN - DESTINATION ARRAY (PERSONS))
 9614 FORMAT(67HOD.3. ORIGIN-DESTINATION ARRAY FOR CIVILIAN VEHICLE TRIP
     1S (PERSONS))
 9615 FORMAT(67HOD.4. ORIGIN-DESTINATION ARRAY FOR MILITARY VEHICLE TRIP
     1S (PERSONS))
  616 ZOT(2)=0.
      DO 63 IZ=NEXT1,NZONES
      ZOT(2)=ZOT(2)+OV(IZ,NGATE1)*FP(IZ)
   63 CONTINUE
C
C I.   RETAIN THE UPPER-LEFT (INTERNAL) OF ARRAY FOR PRINTING.
C
      IZR=0
      DO 65 IZ=NEXT1,NZONES
      IZC=0
      IZR=IZR+1
      DO 64 IZ1=NEXT1,NZONES
      IZC=IZC+1
      ARRAY(IZR,IZC)=0.
      DO 64 K=NT1,NT
      IF(TDSUM(K).GT.0.0)
     1ARRAY(IZR,IZC)= 0.5+ NTO(IZ,K)*NTD(IZ1,K)/TDSUM(K)+ARRAY(IZR,IZC)
   64 CONTINUE
   65 CONTINUE
C
C CALCULATE THE PREDICTED GATE COUNTS IN PERSON TRIPS
      DO 652 IG=1,NGATE
      FSOD1(IG)=0.0
  652 FSOD2(IG)=0.0
      DO 654 IZ=1,NEXT
      DO 654 IG=1,NGATE
```

```
          FSOD2(IG)=FSOD2(IG)+OV(IZ,IG)/2.
     654  FSOD1(IG)=FSOD1(IG)+VD(IZ,IG)/2.
          DO 656 IZ=NEXT1,NZONES
          DO 656 IG=1,NGATE
          FSOD1(IG)=FSOD1(IG)+OV(IZ,IG)/2.
     656  FSOD2(IG)=FSOD2(IG)+VD(IZ,IG)/2.
C  II.  RETAIN THE LOWER-LEFT (EXTERNAL) OF ARRAY FOR PRINTING.
C
          DO 68 IZ=1,NEXT
          IZC=0
          IZR=IZR+1
          DO 67 IZ1=NEXT1,NZONES
          PRTS=0.0
          DO 66 IG=1,NGATE
          IF (FSOD2(IG).NE.0.0)
         1PRTS=PRTS+VD(IZ1,IG)*OV(IZ,IG)/FSOD2(IG)*FP(IZ)
      66  CONTINUE
          IZC=IZC+1
          ARRAY(IZR,IZC)=PRTS+0.5
      67  CONTINUE
      68  CONTINUE
C
C  III.  RETAIN THE UPPER-RIGHT (INTERNAL) OF ARRAY FOR PRINTING.
C
          IZR=0
          LAST=IZC
          DO 71 IZ=NEXT1,NZONES
          IZC=LAST
          IZR=IZR+1
          ZNAM(IZR)=ZNAME(IZ)
          DO 70 IZ1=1,NEXT
          PRTS=0.0
          DO 69 IG=1,NGATE
          IF (FSOD1(IG).NE.0.0)
         1PRTS=PRTS+FA(IZ1)*VD(IZ1,IG)*OV(IZ,IG)/FSOD1(IG)
      69  CONTINUE
          IZC=IZC+1
          ARRAY(IZR,IZC)=PRTS+0.5
      70  CONTINUE
      71  CONTINUE
C
C  IV.  PLACE ZEROES IN THE LOWER-RIGHT (EXTERNAL) OF ARRAY FOR PRINTING.
C
          DO 73 IZ=1,NEXT
          IZC=LAST
          IZR=IZR+1
          ZNAM(IZR)=ZNAME(IZ)
          DO 72 IZ1=1,NEXT
          IZC=IZC+1
          ARRAY(IZR,IZC)=0.0
      72  CONTINUE
      73  CONTINUE
C
C  ARRAY IS NOW READY FOR PRINTING.
C
```

```
      N43=NZONES
      IF (NZONES.GT.43)N43=43
      PRINT 74,(ZNAM(L),L=1,N43)
   74 FORMAT (/16H ORG/DEST. ZONES/,3X,43(1X,A2))
      DO 76 IZ=1,NZONES
      PRINT 75,ZNAM(IZ),(ARRAY(IZ,IZ1),IZ1=1,N43)
   75 FORMAT (1X,A2,43I3)
   76 CONTINUE
      IF (NZONES.LE.43) GO TO 80
      N44=N43+1
      PRINT 9999, (BAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5),
     1TODS,TODE
      PRINT 962
  962 FORMAT(38H  ORIGIN-DESTINATION ARRAY (CONTINUED))
      PRINT 74,(ZNAM(L),L=N44,NZONES)
      DO 77 IZ=1,NZONES
      PRINT 75,ZNAM(IZ),(ARRAY(IZ,IZ1),IZ1=N44,NZONES)
   77 CONTINUE
   80  CONTINUE
   89 RETURN
      END
```

```
      SUBROUTINE  GRAVO     TRACE                            CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE      8

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    6  GRAVE           1  GRAVO

VARIABLES      SN  TYPE            RELOCATION
 2447  ARRAY       INTEGER   ARRAY                        2  BAT      REAL       ARRAY    CHD
  360  C           REAL      ARRAY   / /               5500  CG       REAL       ARRAY    / /
17322  CGD         REAL      ARRAY   / /              17310  CGG      REAL       ARRAY    / /
 2431  CGT         REAL                                 361  COEFO    REAL       ARRAY    TRIP
  171  COEFG       REAL      ARRAY   TRIP              1320  DELA     REAL       ARRAY    RESLT
    6  DOW         REAL              COMM                 1  DVNAME   REAL       ARRAY    DEMVAR
 3024  FA          REAL      ARRAY   ZONES             2122  FCS      REAL       ARRAY    ZONES
    1  FCSP        REAL      ARRAY   TRIP                50  FEXATT   REAL       ARRAY    COMM
   44  FEXGEN      REAL      ARRAY   COMM                60  FINATT   REAL       ARRAY    COMM
   54  FINGEN      REAL      ARRAY   COMM              2742  FP       REAL       ARRAY    ZONES
 2742  FRAMIL      REAL      ARRAY   ZONES            17334  FSOD1    REAL       ARRAY    / /
17404  FSOD2       REAL      ARRAY   / /                171  GCNT15   REAL       ARRAY    GATE
  145  GCOUNT      REAL      ARRAY   GATE                 0  I        INTEGER             COMM
   37  IFCSIZ      INTEGER   ARRAY   TRIP              2421  IG       INTEGER
 2434  II          INTEGER                             2413  INO      INTEGER
   31  IOPT        INTEGER   ARRAY   COMM              2414  IORE     INTEGER
   24  IPFLG       INTEGER   ARRAY   COMM              2436  IT       INTEGER
   13  ITM         INTEGER           COMM              2420  IZ       INTEGER
 2442  IZC         INTEGER                             2441  IZR      INTEGER
 2422  IZ1         INTEGER                                3  J        INTEGER             COMM
    4  K           INTEGER           COMM                 2  L        INTEGER             COMM
 2444  LAST        INTEGER                                1  LGATE    INTEGER    ARRAY    GATE
   15  LHEAD       INTEGER   ARRAY   COMM                40  NCLB     INTEGER             COMM
    7  NDAY        INTEGER           CHD                 42  NDEMVC   INTEGER             COMM
    0  NDV         INTEGER           DEMVAR            1357  NEXT     INTEGER             ZONES
 3106  NEXT1       INTEGER           ZONES                0  NGATE    INTEGER             GATE
  311  NGATE1      INTEGER           GATE                 6  NMO      INTEGER             CHD
   43  NNAME       INTEGER           COMM                37  NPLT     INTEGER             COMM
   41  NPLU        INTEGER           COMM              2437  NT       INTEGER
 2435  NTC         INTEGER                            13616  NTD      INTEGER    ARRAY    / /
12240  NTO         INTEGER   ARRAY   / /                  0  NTRIP    INTEGER             TRIP
  455  NTRIPC      INTEGER           TRIP              2440  NT1      INTEGER
  265  NVARD       INTEGER   ARRAY   TRIP                75  NVARO    INTEGER    ARRAY    TRIP
   14  NYEAR       INTEGER           COMM                 5  NYR      INTEGER             CHD
 2425  NZL         INTEGER                                1  NZLINKS  INTEGER    ARRAY    ZONES
    0  NZONES      INTEGER           ZONES             2415  NZ1      INTEGER
 2445  N43         INTEGER                             2446  N44      INTEGER
15174  OV          REAL      ARRAY   / /                311  PD       REAL                PARKZ
   63  PLA         REAL      ARRAY   PARKZ              376  PLL      REAL       ARRAY    PARKZ
  312  PLS         REAL              PARKZ              313  PLVO     REAL                PARKZ
  314  PNOS        REAL      ARRAY   PARKZ             2640  PRT      INTEGER    ARRAY    RESLT
 2443  PRTS        REAL                                  56  PURP     REAL       ARRAY    TRIP
    1  PV          REAL      ARRAY   PARKZ                0  PZ       REAL                PARKZ
 2722  QUEUE       REAL      ARRAY   RESLT                0  R        INTEGER    ARRAY    / /
  740  RG          INTEGER   ARRAY   / /               2427  SFSOD1   REAL
 2430  SFSOD2      REAL                                2416  SGCO1    REAL
 2417  SGCO2       REAL                                2433  SNTD     REAL
 2432  SNTO        REAL                                2424  SUMXD    REAL
```

```
      SUBROUTINE  GRAVO      TRACE                                    CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE     9

  VARIABLES         SN  TYPE              RELOCATION
     2423  SUMXO        REAL                                  17346  TOSUM       REAL         ARRAY     / /
        5  TOD          REAL                  COMM                0  TODE        REAL                   CHD
        1  TODS         REAL                  CHD             17365  TOSUM       REAL         ARRAY     / /
       10  TOTATT       REAL                  COMM               12  TOTGEN      REAL                   COMM
        7  TP           REAL                  COMM               84  TP15        REAL                   COMM
        0  TT           REAL      ARRAY       RESLT              11  TTPZ        REAL                   COMM
       13  VAR          REAL      ARRAY       DEMVAR             25  VCR         REAL         ARRAY     GATE
    16242  VD           REAL      ARRAY       / /              1364  VEHTYP      REAL         ARRAY     ZONES
     2204  VTYPM        REAL      ARRAY       ZONES             145  VZ          REAL         ARRAY     PARKZ
       27  XP           INTEGER               COMM               30  YP          INTEGER                COMM
        1  Z            INTEGER               COMM             1360  ZAT         REAL         ARRAY     ZONES
     1213  ZATTR        REAL      ARRAY       ZONES            1275  ZGENR       REAL         ARRAY     ZONES
     1362  ZGT          REAL      ARRAY       ZONES              63  ZLINKS      INTEGER      ARRAY     ZONES
     7353  ZNAM         INTEGER   ARRAY                        2040  ZNAME       INTEGER      ARRAY     ZONES
     2426  ZTT          REAL                                    227  ZV          REAL         ARRAY     PARKZ

  FILE NAMES          MODE
        OUTPUT         FMT

  EXTERNALS            TYPE    ARGS
        AMAX1         REAL      2

  STATEMENT LABELS
       12  1                                      0  2       INACTIVE                1164  6
        0  11                                     0  12                               225  13
      314  14                                     0  15                                 0  31
        0  32                                     0  45      INACTIVE                   0  46
        0  47                                     0  48                                 0  49
        0  61                                     0  63                                 0  64
        0  65                                     0  66                                 0  67
        0  68                                     0  69                                 0  70
        0  71                                     0  72                                 0  73
     2371  74       FMT                        2376  75       FMT                       0  76
        0  77                                  2260  80                              2263  89
        0  110                                    0  125                                0  475
      777  481                                    0  483                             1067  485
        0  611                                    0  612                             1437  613
     1467  614                                 1517  615                             1547  616
        0  652                                    0  654                                0  656
     2276  914      FMT                        2336  949      FMT                    2401  962      FMT
        0  6111                                1363  6115                            1403  6119
     2320  9486     FMT                        2341  9613     FMT                    2347  9614     FMT
     2360  9615     FMT                        2307  9999     FMT

  COMMON BLOCKS    LENGTH
           COMM        53
           ZONES     1607
           DEMVAR     511
           TRIP       302
           GATE       202
           RESLT     1730
           PARKZ      304
           / /       7955
           CHD          8
```

```
STATISTICS
  PROGRAM LENGTH     7435B     3869
   COMMON LENGTH    11155B     4717
    BLANK COMMON    17423B     7955
```

```
      SUBROUTINE GATFUN
*
*  THIS SUBROUTINE CREATES A LIST OF ZONES IN ORDER OF THEIR CONTRIBUTION
*  TO EACH GATE, AND A LIST OF GATES IN ORDER OF THEIR CONTRIBUTION
*  TO ZONES.  IT ALSO CREATES A MATRIX INDICATING THE ASSOCIATION OF
*  ZONES WITH GATES.  THE TIME OF DAY AT WHICH THE LISTS AND MATRIX ARE
*  CREATED AFFECTS WHETHER THE TRAFFIC VOLUMES USED SHOULD BE THOSE
*  TRAVELLING FROM GATES TO ZONES (VD ARRAY) OR FROM ZONES TO GATES
*  (OD ARRAY).  THE VD ARRAY SHOULD BE USED IN THE MORNING, AND THE
*   OD ARRAY IN THE EVENING.  IN ORDER TO AVOID A LOT OF DUPLICATION
*  OF CODE, BOTH ARRAYS HAVE BEEN EQUIVALENCED TO A LARGER, LOCAL ARRAY,
*  AND AN OFFSET FACTOR WILL BE BASED ON THE TIME OF DAY TO ACCESS
*  DATA IN THE APPROPRIATE PART OF THE LOCAL ARRAY.
*
      COMMON /COMM/ I, Z, L, J, K, TOD, DOW, TP, TOTATT, TTPZ, TOTGEN,
     1ITM,NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU,
     2NDEMVC,NNAME,FEXGEN(4),FEXATT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
     $  ZOENR(50), NEXT, ZAT(2), ZOT(2), VEHTYP(6,50), ZNAME(50),
     $  FCS(50), VTYPM(7,50), FRAMIL(50,2), NEXT1
      COMMON /GATE/ NGATE, LGATE(2,10), VCR(10,2,4), GCOUNT(2,10),
     $  GCNT15(10,2,4), NGATE1
      COMMON R(240),C(240),RG(10,240),CG(10,240)
      INTEGER R,RG
      COMMON NTO(50,15), NTD(50,15), OV(50,11), VD(50,11)
      COMMON MATRIX(10,50),LIGZ(10,50),LIZG(50,10)
      DIMENSION VDOV(50,22)
      EQUIVALENCE (OV(1,1), VDOV(1,1))
*
*
*  INITIALIZE LIGZ AND LIZG ARRAYS
      DO 1 I = 1, 50
      DO 1 J = 1, 10
      LIGZ(J,I) = 0
    1 LIZG(I,J) = 0
*
*  SET OFFSET FACTOR BASED ON TIME OF DAY
      IOFF = 0
      IF (TOD .LE. 1200.  .AND.TOD.GT.600.) IOFF = 11
*
*  BUILD LIST OF ZONES IN ORDER OF ATTRACTION OR CONTRIBUTION TO
*  GATE TOTAL
      DO 12 IG = 1, NGATE
      LIGZ(IG,1) = NEXT1
      J = 1
      J1 = 1
      NEXT2 = NEXT1 + 1
      DO 12 IZ = NEXT2, NZONES
   10 IF (VDOV(IZ,IG+IOFF) .LT. VDOV(LIGZ(IG,J),IG+IOFF))
     $  GO TO 11
      LIGZ(IG,J+1) = LIGZ(IG,J)
      J = J - 1
      IF(J.GE.1) GO TO 10
   11 LIGZ(IG,J+1) = IZ
```

```
      J1 = J1 + 1
      J = J1
   12 CONTINUE
*
*  BUILD LIST OF GATES IN ORDER OF ATTRACTION OR CONTRIBUTION TO
*  ZONE TOTAL
      DO 23 IZ = NEXT1, NZONES
      LIZG(IZ,1) = 1
      IF(NGATE.LE.1) GO TO 23
      J = 1
      J1 = 1
      DO 22 IG = 2, NGATE
   20 IF (VDOV(IZ,IG+IOFF) .LT. VDOV(IZ,LIZG(IZ,J)+IOFF))
     $  GO TO 21
      LIZG(IZ,J+1) = LIZG(IZ,J)
      J = J -1
      IF (J.GE.1) GO TO 20
   21 LIZG(IZ,J+1) = IG
      J1 = J1 + 1
      J = J1
   22 CONTINUE
 23   CONTINUE
*
*  BUILD MATRIX INDICATING GATE-TO-ZONE AND ZONE-TO-GATE ASSOCIATIONS -
*  FIRST DO GATE-TO-ZONE PART
      DO 34 IG = 1,NGATE
      SUMVOL = 0.
      DO 31 I = 1, NZONES
      MATRIX(IG,I) = 0
      IZ = LIGZ(IG,I)
      IF (IZ .LE. 0) GO TO 32
   31 SUMVOL = SUMVOL + VDOV(IZ,IG+IOFF)
   32 CONTINUE
      SUMVOL = SUMVOL / 2.
      DO 33 I = 1, NZONES
      IZ = LIGZ(IG,I)
      MATRIX(IG,IZ) = 1
      IF(IZ.LE.0) GO TO 34
      IF (VDOV(IZ,IG+IOFF) .GT. SUMVOL) GO TO 34
      SUMVOL = SUMVOL - VDOV(IZ,IG+IOFF)
   33 CONTINUE
   34 CONTINUE
*
*  NOW FILL IN ZONE-TO-GATE PART OF MATRIX
      DO 38 IZ = NEXT1,NZONES
      SUMVOL = 0.
      DO 35 J = 1, NGATE
      IG = LIZG(IZ,J)
      IF (IG .LE. 0) GO TO 36
   35 SUMVOL = SUMVOL + VDOV(IZ,IG+IOFF)
   36 CONTINUE
      SUMVOL = SUMVOL / 2.
      DO 37 J = 1, NGATE
      IG = LIZG(IZ,J)
      MATRIX(IG,IZ) = 1
```

```
      IF (VDOV(IZ,IG+IOFF) .GT. SUMVOL) GO TO 38
      SUMVOL = SUMVOL - VDOV(IZ,IG+IOFF)
   37 CONTINUE
   38 CONTINUE
*     PRINT 91,((VDOV(IZ,IG),IG=1,10),IZ=1,NZONES)
*91   FORMAT(1X,10F10.0)
*     PRINT 939,((LIZG(IZ,IG),IG=1,10),IZ=1,NZONES)
*939  FORMAT(1X 10I10)
*     PRINT 939,((LIGZ(IG,IZ),IG=1,10),IZ=1,NZONES)
      RETURN
      END
```

```
      SUBROUTINE GATFUN   TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE     4

      SYMBOLIC REFERENCE MAP

 ENTRY POINTS
     1  GATFUN

 VARIABLES      SN  TYPE           RELOCATION
   380  C          REAL       ARRAY   / /            5500  CG         REAL       ARRAY   / /
     6  DOW        REAL               COMM           2122  FCS        REAL       ARRAY   ZONES
    50  FEXATT     REAL       ARRAY   COMM             44  FEXGEN     REAL       ARRAY   COMM
    60  FINATT     REAL       ARRAY   COMM             54  FINGEN     REAL       ARRAY   COMM
  2742  FRAMIL     REAL       ARRAY   ZONES           171  GCNT15     REAL       ARRAY   GATE
   145  GCOUNT     REAL       ARRAY   GATE              0  I          INTEGER            COMM
   372  IG         INTEGER                            371  IOFF       INTEGER
    31  IOPT       INTEGER    ARRAY   COMM             24  IPFLG      INTEGER    ARRAY   COMM
    13  ITM        INTEGER            COMM            375  IZ         INTEGER
     3  J          INTEGER            COMM            373  J1         INTEGER
     4  K          INTEGER            COMM              2  L          INTEGER            COMM
     1  LGATE      INTEGER    ARRAY   GATE             15  LHEAD      INTEGER    ARRAY   COMM
 20274  LIGZ       INTEGER    ARRAY   / /           21260  LIZG       INTEGER    ARRAY   / /
 17310  MATRIX     INTEGER    ARRAY   / /              40  NCLB       INTEGER            COMM
    42  NDEMVC     INTEGER            COMM           1357  NEXT       INTEGER            ZONES
  3106  NEXT1      INTEGER            ZONES           374  NEXT2      INTEGER
     0  NGATE      INTEGER            GATE            311  NGATE1     INTEGER            GATE
    43  NNAME      INTEGER            COMM             37  NPLT       INTEGER            COMM
    41  NPLU       INTEGER            COMM          13616  NTD        INTEGER    ARRAY   / /
 12240  NTO        INTEGER    ARRAY   / /              14  NYEAR      INTEGER            COMM
     1  NZLINKS    INTEGER    ARRAY   ZONES             0  NZONES     INTEGER            ZONES
 15174  OV         REAL       ARRAY   / /               0  R          INTEGER    ARRAY   / /
   740  RG         INTEGER    ARRAY   / /             376  SUMVOL     REAL
     5  TOD        REAL               COMM             10  TOTATT     REAL               COMM
    12  TOTGEN     REAL               COMM              7  TP         REAL               COMM
    64  TP15       REAL               COMM             11  TTPZ       REAL               COMM
    25  VCR        REAL       ARRAY   GATE          16242  VD         REAL       ARRAY   / /
 15174  VDOV       REAL       ARRAY   / /            1364  VENTYP     REAL       ARRAY   ZONES
  2204  VTYPM      REAL       ARRAY   ZONES            27  XP         INTEGER            COMM
    30  YP         INTEGER            COMM              1  Z          INTEGER            COMM
  1360  ZAT        REAL       ARRAY   ZONES          1213  ZATTR      REAL       ARRAY   ZONES
  1275  ZGENR      REAL       ARRAY   ZONES          1362  ZGT        REAL       ARRAY   ZONES
    63  ZLINKS     REAL       ARRAY   ZONES          2040  ZNAME      REAL       ARRAY   ZONES

 STATEMENT LABELS
     0  1                                 45  10                                 100  11
     0  12                               132  20                                 165  21
     0  22                               201  23                                   0  31
   235  32                                 0  33                                 275  34
     0  35                               325  36                                   0  37
   362  38

 COMMON BLOCKS   LENGTH
        COMM         53
        ZONES      1607
        GATE        202
        / /        9380
```

```
      SUBROUTINE  GATFUN      TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE       5

  STATISTICS
    PROGRAM LENGTH      377B      255
     COMMON LENGTH     3506B     1862
      BLANK COMMON    22244B     9380
```

```
SUBROUTINE MODAL     TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE    1
      SUBROUTINE MODAL
C
C          THIS SUBROUTINE USES THE VEHICLE TYPE AND LOAD FACTOR TO
C     DETERMINE THE VEHICULAR TRIPS BETWEEN ZONE-GATE PAIRS AND ZONE-ZONE
C     PAIRS.  ALSO, THE BUS LOAD FACTOR IS DETERMINED FROM THE EXPECTED
C     COST OF TRAVEL BY BUS OR ALTERNATE MEANS.
C
      COMMON /CONV/ I,Z,L,J,K,TOD,DOW,TP,TOTATT,TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU,NDEHVC
     2,NNAME,FEXGEN(4),FEXATT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON R(240),C(240),RD(10,240),CD(10,240)
      INTEGER R,RD
      COMMON NTG(50,15),NTD(50,15),GV(50,11),VD(50,11)
      COMMON /ZONES/ NZONES,NZLINKS(50),ZLINKS(12,50),ZATTR(50),ZGENR
     1(50),NEXT,ZAT(2),ZGT(2),VEHTYP(6,50),ZNAME(50),FCS(50),VTYPM(7,50)
     2,FRAMIL(50,2),NEXT1
      INTEGER ZLINKS,ZNAME
      COMMON /TRIP/ NTRIP,FCSP(15,2),IFCSIZ(15),PURP(15), NVARG(4,15)
     1,COEFG(4,15),NVARD(4,15),COEFD(4,15),NTRIPC
     2,LANDG(4,15),LANDD(4,15),PLUALU(6,6,3)
      COMMON /VEHLOD/ NVLF,VLF(7),VLFM(7),PVPI
      COMMON /PARKZ/ PZ,PV(50),PLA(50),VZ(50),ZV(50),PD,PLS,PLVG,PNOS
     1(50),PLL(50)
      INTEGER PNOS,PZ
      COMMON /GATE/ NGATE,LGATE(2,10),VCR(10,2,4),GCOUNT(2,10),GCNT15
     1(10,2,4),NGATE1
      COMMON /CHD/ TODE,TODS,DAT(3),NYR,NMO,NDAY
C
C          COMPUTE AN ATTRACTION FACTOR TO OTHER ZONES FOR BUSES ONLY
C     FOR EACH ZONE, IZ.
C
      IF(IPFLG(3).NE.1.AND.IPFLG(3).NE.3.AND.IPFLG(3).NE.5.AND.
     1IPFLG(3).NE.7) GO TO 4
      PRINT 9000, (DAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5),
     1TODS,TODE
 9000 FORMAT(1H1,2A10,A3,7X,I2,1H/,I2,1H/,I2,5X5A10,6X12HPERIOD FROM
     1F5.0,3H TOF5.0,6H HOURS)
      PRINT 9
    9 FORMAT(40H0E.1. MODAL SPLIT - VEHICLE LOAD FACTORS
     1//6X,50H PERSONS    PERSONS    CIVILIAN  CIVILIAN  MILITARY
     2     51H MILITARY     PERCENT  PERCENT    PERSON     PERSON
     3/ 6X,50H    PER       PER MIL.  VEH TRIPS VEH TRIPS VEH TRIPS
     4     50H VEH TRIPS    MOTOR     MILITARY TRIPS FROM TRIPS TO
     5/ 6H ZONE ,50H VEHICLE    VEHICLE   ORG-GATE  GATE-DEST ORG-GATE
     6     50H GATE-DEST   VEHICLES VEHICLES   ORIGIN      DEST.  )
    4 DO 200 IZ=1,NZONES
      ZV(IZ)=0.0
      VZ(IZ)=0.0
      F1=VLFM(7)*VTYPM(7,IZ)
      IF(VLFM(7).LE.0.) F1=VTYPM(7,IZ)*AMAX1(44.,1.+(GV(IZ,NGATE1)
     1 +VD(IZ,NGATE1))/TP*100.)
C
C          CONVERT GV AND VD ARRAYS TO VEHICLE TRIPS.
C
```

```
      C   ASSUME ALL BUS TRIPS ARE INTERNAL, SUB. FROM INTERNAL OV,VD
      *     OV(IZ,NGATE1)=AMAX1(VTYPM(7,IZ),OV(IZ,NGATE1)-F1)
      *     VD(IZ,NGATE1)=AMAX1(VTYPM(7,IZ),VD(IZ,NGATE1)-F1)
      C
      C        DETERMINE THE NUMBER OF VEHICLES   GOING TO OR
      C     FROM EACH ZONE.
      C
      C  SPPH IS THE SUM OF PERSONS PER HUNDRED VEHICLES(BIKES INCLUDED)
      C  SMVT IS THE SUM OF THE MOTOR VEHICLES PER HUNDRED VEHICLES.
      C  SPPH/SMVT IS PERSONS PER MOTOR VEH.
      C  VTRIP IS IN TERMS OF HUNDREDS OF VEHICLE TRIPS,  OV WILL BE CONVERTED
      C  FROM PERSON TRIPS TO MOTOR VEHICLE TRIPS.
            SPPH1=0.0
            VTRIP1=0.0
            VTRIP3=0.0
            SMVT=0.0
            DO 100 I=1,6
            SPPH1=SPPH1+VLF(I)*VEHTYP(I,IZ)
            SMVT = SMVT+VEHTYP(I,IZ)
        100 CONTINUE
      C
      C    CONVERT PERSON TRIPS (OV, VD) TO VEHICLE TRIPS (VTRIP1, VTRIP3)
      C
      C     REMOVE BUS TRIPS FROM OV, VD ARRAYS
            SMOV=0.0
            SMVD=0.0
            DO 105 IG=1,NGATE1
            SMOV=SMOV+OV(IZ,IG)
            SMVD=SMVD+VD(IZ,IG)
        105 CONTINUE
      C     INCLUDE BICYCLES AND WALKERS IN SPPH1
            SPPH1=SPPH1+100.-SMVT
            IF (SPPH1.LE.0.0) GO TO 135
            F2 = 1.0
            IF(SMOV.NE.0.) F2=AMAX1((SMOV-F1)/SMOV,0.0)
            F3 = 1.0
            IF(SMVD.NE.0.) F3=AMAX1((SMVD-F1)/SMVD,0.0)
            DO 110 IG=1,NGATE1
            VTRIP1=VTRIP1+OV(IZ,IG)*F2*(1.0-FRAMIL(IZ,1))/SPPH1
            VTRIP3=VTRIP3+VD(IZ,IG)*F3*(1.0-FRAMIL(IZ,2))/SPPH1
        110 CONTINUE
             VTRIP1=VTRIP1+VTYPM(7,IZ)/100.
             VTRIP3=VTRIP3+VTYPM(7,IZ)/100.
            DO 120 K=1,NTRIPC
            NTO(IZ,K)=NTO(IZ,K)/SPPH1*SMVT*F2
        120 NTD(IZ,K)=NTD(IZ,K)/SPPH1*SMVT*F3
        135 SPPH2=0.0
            VTRIP2=0.0
            VTRIP4=0.0
            SMVTM=0.0
            DO 130 I=1,6
            SPPH2=SPPH2+VLFM(I)*VTYPM(I,IZ)
            SMVTM=SMVTM+VTYPM(I,IZ)
        130 CONTINUE
             SPPH2=SPPH2+100.-SMVTM
```

```
      IF (SPPH2.LE.0.0) GO TO 155
      DO 140 IG=1,NGATE1
      VTRIP2=VTRIP2+OV(IZ,IG)*FRAMIL(IZ,1)/SPPH2
      VTRIP4=VTRIP4+VD(IZ,IG)*FRAMIL(IZ,2)/SPPH2
  140 CONTINUE
C
      IF(NTRIPC.LT.NTRIP)GO TO 155
      NTRIPM=NTRIPC+1
      DO 145 K=NTRIPM,NTRIP
      NTO(IZ,K)=NTO(IZ,K)/SPPH2*SMVTH
  145 NTD(IZ,K)=NTD(IZ,K)/SPPH2*SMVTH
C        CONVERT ALL OZ AND VD TO VEHICLE TRIPS.
C
  155 ZATTR(IZ)=0.0
      ZGENR(IZ)=0.0
      SMOV=SMVD=0.0
      DO 170 IG=1,NGATE1
      SMOV=SMOV+OV(IZ,IG)
      SMVD=SMVD+VD(IZ,IG)
  170 CONTINUE
C  UPDATE FRAMIL FROM PERSON TRIPS TO VEHICLE TRIPS
C    STORE VEHICLE TRIPS IN THE OF ARRAY
      IF (SMOV.LE.0.0) GO TO 165
      ZGENR(IZ)=VTRIP1*SMVT+VTRIP2*SMVTM
      FRAMIL(IZ,1)=VTRIP2*SMVTM/ZGENR(IZ)
      DO 180 IG=1,NGATE1
      OV(IZ,IG)=ZGENR(IZ)*OV(IZ,IG)/SMOV
  180 CONTINUE
  165 IF (SMVD.LE.0.0) GO TO 195
      ZATTR(IZ)=VTRIP3*SMVT+VTRIP4*SMVTM
      FRAMIL(IZ,2)=VTRIP4*SMVTM/ZATTR(IZ)
      DO 190 IG=1,NGATE1
      VD(IZ,IG)=ZATTR(IZ)*VD(IZ,IG)/SMVD
  190 CONTINUE
  195 CONTINUE
      IF(IPFLG(3).NE.1.AND.IPFLG(3).NE.3.AND.IPFLG(3).NE.5.AND.
     1IPFLG(3).NE.7) GO TO 200
      PRINT 10,ZNAME(IZ),SPPH1,SPPH2,VTRIP1,VTRIP3,VTRIP2,VTRIP4,SMVT,
     1SMVTM,SMOV,SMVD
   10 FORMAT(2H ,A2,-2P,2F10.5,2P,4F10.2,0P,2X,4F10.3)
  200 CONTINUE
      IF(IPFLG(3).NE.1.AND.IPFLG(3).NE.3.AND.IPFLG(3).NE.5.AND.
     1IPFLG(3).NE.7) GO TO 90
      PRINT 9999, (BAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5),
     1TODS,TODE
      PRINT 920, (IG,IG,IG=1,NGATE1)
  920 FORMAT(77HOE.2. ORIGIN TO GATE (OG) AND GATE TO DESTINATION (GD) T
     1RIPS (MOTOR VEHICLES)
     2//7H  ZONE ,9(4H  OG,I1,4H  GD,I1),2(3H OG,I2,3H DG,I2))
      DO 205 J=1,NZONES
  205 PRINT 20, ZNAME(J),(OV(J,II),VD(J,II),II=1,NGATE1)
   20 FORMAT(3X,A2,2X,22F5.0)
   90 RETURN
      END
```

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        SUBROUTINE  MODAL     TRACE                              CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE     4

        SYMBOLIC REFERENCE MAP

ENTRY POINTS
    1  MODAL

VARIABLES      SN  TYPE            RELOCATION
    2  BAT         REAL      ARRAY   CHD              360  C           REAL        ARRAY    / /
 5500  CG          REAL      ARRAY   / /              361  COEFD       REAL        ARRAY    TRIP
  171  COEFO       REAL      ARRAY   TRIP               6  DOW         REAL                 COMM
 2122  FCS         REAL      ARRAY   ZONES              1  FCSP        REAL        ARRAY    TRIP
   50  FEXATT      REAL      ARRAY   COMM              44  FEXGEN      REAL        ARRAY    COMM
   60  FINATT      REAL      ARRAY   COMM              54  FINGEN      REAL        ARRAY    COMM
 2742  FRAMIL      REAL      ARRAY   ZONES           1050  F1          REAL
 1060  F2          REAL                              1061  F3          REAL
  171  GCNT15      REAL      ARRAY   GATE             145  GCOUNT      REAL        ARRAY    GATE
    0  I           INTEGER           COMM              37  IFCSIZ      INTEGER     ARRAY    TRIP
 1057  IG          INTEGER                           1046  II          INTEGER
   31  IOPT        INTEGER   ARRAY   COMM              24  IPFLG       INTEGER     ARRAY    COMM
   13  ITM         INTEGER           COMM            1047  IZ          INTEGER
    3  J           INTEGER           COMM               4  K           INTEGER              COMM
    2  L           INTEGER           COMM             552  LANDD       INTEGER     ARRAY    TRIP
  456  LANDO       INTEGER   ARRAY   TRIP               1  LGATE       INTEGER     ARRAY    GATE
   15  LHEAD       INTEGER   ARRAY   COMM              40  NCLB        INTEGER              COMM
    7  NDAY        INTEGER           CHD               42  NDEMVC      INTEGER              COMM
 1357  NEXT        INTEGER           ZONES           3106  NEXT1       INTEGER              ZONES
    0  NGATE       INTEGER           GATE             311  NGATE1      INTEGER              GATE
    6  NMO         INTEGER           CHD               43  NNAME       INTEGER              COMM
   37  NPLT        INTEGER           COMM              41  NPLU        INTEGER              COMM
13616  NTD         INTEGER   ARRAY   / /            12240  NTO         INTEGER     ARRAY    / /
    0  NTRIP       INTEGER           TRIP             455  NTRIPC      INTEGER              TRIP
 1066  NTRIPM      INTEGER                            265  NVARD       INTEGER     ARRAY    TRIP
   75  NVARO       INTEGER   ARRAY   TRIP               0  NVLF        INTEGER              VEHLOD
   14  NYEAR       INTEGER           COMM               5  NYR         INTEGER              CHD
    1  NZLINKS     INTEGER   ARRAY   ZONES              0  NZONES      INTEGER              ZONES
15174  OV          REAL      ARRAY   / /              311  PD          REAL                 PARKZ
   63  PLA         REAL      ARRAY   PARKZ            376  PLL         REAL        ARRAY    PARKZ
  312  PLS         REAL              PARKZ            646  PLUALU      REAL        ARRAY    TRIP
  313  PLVO        REAL              PARKZ            314  PNOS        INTEGER     ARRAY    PARKZ
   56  PURP        REAL      ARRAY   TRIP               1  PV          REAL        ARRAY    PARKZ
   17  PVPI        REAL              VEHLOD             0  PZ          INTEGER              PARKZ
    0  R           INTEGER   ARRAY   / /              740  RG          INTEGER     ARRAY    / /
 1055  SMOV        REAL                              1056  SMVD        REAL
 1054  SMVT        REAL                              1065  SMVTM       REAL
 1051  SPPH1       REAL                              1062  SPPH2       REAL
    5  TOD         REAL              COMM               0  TODE        REAL                 CHD
    1  TODS        REAL              CHD               10  TOTATT      REAL                 COMM
   12  TOTGEN      REAL              COMM               7  TP          REAL                 COMM
   64  TP15        REAL              COMM              11  TTPZ        REAL                 COMM
   25  VCR         REAL      ARRAY   GATE           16242  VD          REAL        ARRAY    / /
 1364  VEHTYP      REAL      ARRAY   ZONES              1  VLF         REAL        ARRAY    VEHLOD
   10  VLFM        REAL      ARRAY   VEHLOD          1052  VTRIP1      REAL
 1063  VTRIP2      REAL                              1053  VTRIP3      REAL
 1064  VTRIP4      REAL                              2204  VTYPM       REAL        ARRAY    ZONES
  145  VZ          REAL      ARRAY   PARKZ             27  XP          INTEGER              COMM
```

```
VARIABLES     SN  TYPE              RELOCATION
     30  YP        INTEGER            COMM              1  Z          INTEGER              COMM
   1360  ZAT       REAL      ARRAY    ZONES          1213  ZATTR      REAL       ARRAY     ZONES
   1275  ZGENR     REAL      ARRAY    ZONES          1362  ZGT        REAL       ARRAY     ZONES
     63  ZLINKS    INTEGER   ARRAY    ZONES          2040  ZNAME      INTEGER    ARRAY     ZONES
    227  ZV        REAL      ARRAY    PARKZ

FILE NAMES         MODE
         OUTPUT     FMT

EXTERNALS          TYPE   ARGS
         AMAX1     REAL     2

STATEMENT LABELS
     43  4                         743  9      FMT                    1012  10     FMT
   1036  20      FMT               722  90                               0  100
      0  105                         0  110                              0  120
      0  130                       307  135                              0  140
      0  145                       431  155                              0  170
      0  180                       513  185                              0  190
    547  195                       616  200                              0  205
   1017  920     FMT               732  9999   FMT

COMMON BLOCKS   LENGTH
         COMM       53
         / /      7880
         ZONES    1607
         TRIP      530
         VEHLOD     16
         PARKZ     304
         GATE      202
         CHD         8

STATISTICS
   PROGRAM LENGTH    1067B     567
    COMMON LENGTH    5240B    2720
     BLANK COMMON   17310B    7880
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```
                SUBROUTINE SMOOTH
                COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
               1,NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU,NDEMVC
               2,NNAME,FEXGEN(4),FEXATT(4),FINGEN(4),FINATT(4),TP15
                INTEGER Z,XP,YP
                COMMON /PARKZ/ PZ,PV(50),PLA(50),VZ(50),ZV(50),PD,PLS,PLBO,
               1 PNOS(50),PLL(50)
                INTEGER PZ,PNOS
                COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
               1ZGENR (50), NEXT, ZAT(2), ZGT(2), VEHTYP(6,50), ZNAME(50),FCS(50)
               2,VTYPM(7,50),FRAMIL(50,2),NEXT1
                INTEGER ZLINKS,ZNAME
                COMMON /TRIP/ NTRIP,FCSP(15,2),IFCSIZ(15),PURP(15), NVARO(4,15)
               1,COEFO(4,15),NVARD(4,15),COEFD(4,15),NTRIPC
                COMMON / GATE/ NGATE, LGATE(2,10), VCR(10, 2,4),GCOUNT(2,10),
               1GCNT15(10,2,4),NGATE1
                COMMON R(240),C(240),RG(10,240),CG(10,240)
                INTEGER R,RG
                COMMON NTO(50,15),NTD(50,15),OV(50,11),VD(50,11)
                COMMON /CHD/ TODE,TODS,BAT(3),NYR,NMO,NDAY
                EQUIVALENCE(FP,FRAMIL(1,1)),(FA,FRAMIL(1,2))
      C  THE SUM OF OV FOR ALL GATES AND THE SUM OF VD FOR ALL GATES+1 EQUALS
      C     ZGENR(IZ) AND ZATTR(IZ),I.E. THE VEHICLES ORIGINATING AND DESTINED FOR
      C     EACH ZONE.  THE SUM OF OV FOR ALL EXTERNAL ZONES DOES NOT(NECESSARILY)
      C     EQUAL  GCOUNT(2, IG) I.E. THE NUMBER ENTERING THRU IG.  THIS SECTION
      C     SMOOTHS THE OV AND VD ARRAYS TOWARD EQUALITY WITH GCOUNT.
      *         DO  50  IZ = 1,NZONES
      *         ZGENR(IZ)=0
      *         ZATTR(IZ)=0
      *         DO  50  K = 1, NTRIP
      *         ZGENR(IZ) = ZGENR(IZ) + NTO(IZ,K)
      *50       ZATTR(IZ) = ZATTR(IZ) + NTD(IZ,K)
      C*          COMPUTE THE FRACTION OF MILITARY VEHICLES PRODUCED
      C*           OR ATTRACTED TO EACH ZONE
      *         NTC=NTRIPC+1
      *         IF (NTC.GT.NTRIP) GO TO 506
      *         DO 505 IZ = 1,NZONES
      *         FRAMIL(IZ,1)=0.
      *         FRAMIL(IZ,2)=0.
      *         DO 505 NT=NTC,NTRIP
      C  FRACTION OF MILITARY PRODUCTIONS
      *          IF(ZGENR(IZ).NE.0.0)
      *        1FRAMIL(IZ,1)=FRAMIL(IZ,1)+NTO(IZ,NT)/ZGENR(IZ)
      C  FRACTION OF MILITARY ATTRACTIONS
      **         IF(ZATTR(IZ).NE.0.0)
      *        1FRAMIL(IZ,2)=FRAMIL(IZ,2)+NTD(IZ,NT)/ZATTR(IZ)
      *505      CONTINUE
      *506       CONTINUE
      C   GENERATE CIVILIAN O-D ARRAYS
      C           EXTERNAL ZONE COMPUTATIONS FOR INITIAL SMOOTHING
                GCSUM1=0.0
                OVSUM1=0.0
                DO 11 IG=1,NGATE
                OVSU=0.
                GCSUM1=GCSUM1+GCNT15(IG,2,ITM)
```

```
      DO 10 IZ=1,NEXT
   10 OVSU=OVSU+OV(IZ,IG)
      IF (GCNT15(IG,2,ITM).LT.0.) GCNT15(IG,2,ITM)=OVSU
      OVSUM1=OVSUM1+OVSU
   11 CONTINUE
      IF(NCLB.EQ.0) FEXGEN(ITM)=OVSUM1/GCSUM1
      IF(FEXGEN(ITM).LE.0.0) FEXGEN(ITM)=1.0
      IF (IOPT(3).EQ.2) GO TO 13
      IF (IOPT(3).NE.1) GO TO 15
      DO 12 IG=1,NGATE
      DO 12 IZ=1,NEXT
      OV(IZ,IG)=OV(IZ,IG)/FEXGEN(ITM)
   12 CONTINUE
      GO TO 15
   13 DO 14 IG=1,NGATE
      GCNT15(IG,2,ITM)=GCNT15(IG,2,ITM)*FEXGEN(ITM)
   14 CONTINUE
C       EXTERNAL ZONE ... DESTINATION CASE.
      GCSUM1=GCSUM1*FEXGEN(ITM)
   15  GCSUM2=0.0
      VDSUM1=0.
      DO 17 IG=1,NGATE
      GCSUM2=GCSUM2+GCNT15(IG,1,ITM)
      VDSU=0.0
      DO 16 IZ=1,NEXT
   16 VDSU=VDSU+VD(IZ,IG)
      IF (GCNT15(IG,1,ITM).LT.0.) GCNT15(IG,1,ITM)=VDSU
      VDSUM1=VDSUM1+VDSU
   17 CONTINUE
      IF(NCLB.EQ.0) FEXATT(ITM)=VDSUM1/GCSUM2
      IF(FEXATT(ITM).LE.0.0)FEXATT(ITM)=1.0
      IF (IOPT(3).EQ.2) GO TO 19
      IF (IOPT(3).NE.1) GO TO 21
      DO 18 IG=1,NGATE
      DO 18 IZ=1,NEXT
      VD(IZ,IG)=VD(IZ,IG)/FEXATT(ITM)
   18 CONTINUE
      GO TO 21
   19 DO 20 IG=1,NGATE
      GCNT15(IG,1,ITM)=GCNT15(IG,1,ITM)*FEXATT(ITM)
   20 CONTINUE
      GCSUM2=GCSUM2*FEXATT(ITM)
C       INTERNAL ZONE COMPUTATIONS FOR INITIAL SMOOTHING.
   21 VDSUM2=0.0
      DO 22 IG=1,NGATE
      DO 22 IZ=NEXT1,NZONES
      VDSUM2=VDSUM2+VD(IZ,IG)
   22 CONTINUE
      IF(NCLB.EQ.0) FINATT(ITM)=VDSUM2/GCSUM1
      IF(FINATT(ITM).LE.0.0)FINATT(ITM)=1.0
      IF (IOPT(3).EQ.0..OR.IOPT(3).EQ.3) GO TO 231
      DO 23 IG=1,NGATE
      DO 23 IZ=NEXT1,NZONES
      VD(IZ,IG)=VD(IZ,IG)/FINATT(ITM)
   23 CONTINUE
```

```
 231  OVSUM2=0.0
      DO 24 IG=1,NGATE
      DO 24 IZ=NEXT1,NZONES
      OVSUM2=OVSUM2+OV(IZ,IG)
  24  CONTINUE
      IF(NCLB.EQ.0)FINGEN(ITM)=OVSUM2/GCSUM2
      IF(FINGEN(ITM).LE.0.0)FINGEN(ITM)=1.0
      IF (IOPT(3).EQ.3) GO TO 253
      IF (IOPT(3).EQ.0) GO TO 259
      DO 25 IG=1,NGATE
      DO 25 IZ=NEXT1,NZONES
      OV(IZ,IG)=OV(IZ,IG)/FINGEN(ITM)
  25  CONTINUE
      GO TO 259
C  ADJUST GATE COUNTS TO INT. CONTS THEN ADJUST EXT. COUNTS TO GATE COUNTS.
 253  GCSUM1=GCSUM1*FINATT(ITM)
      GCSUM2=GCSUM2*FINGEN(ITM)
      FEXGEN(ITM)=OVSUM1/GCSUM1
      FEXATT(ITM)=VDSUM1/GCSUM2
      DO 255 IG=1,NGATE
      GCNT15(IG,1,ITM)=GCNT15(IG,1,ITM)*FINGEN(ITM)
      GCNT15(IG,2,ITM)=GCNT15(IG,2,ITM)*FINATT(ITM)
      DO 254 IZ=1,NEXT
      IF(FEXGEN(ITM).GT.0.) OV(IZ,IG)=OV(IZ,IG)/FEXGEN(ITM)
 254  IF(FEXATT(ITM).GT.0.) VD(IZ,IG)=VD(IZ,IG)/FEXATT(ITM)
 255  CONTINUE
 259  CONTINUE
C
      PRINT 9999, (BAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5),
     1TODS,TODE
9999 FORMAT(1H1,2A10,A3,7X,I2,1H/,I2,1H/,I2,5X5A10,6X12HPERIOD FROM
     1F5.0,3H TOF5.0,6H HOURS)
      PRINT 925,FEXGEN(ITM),FEXATT(ITM),FINGEN(ITM),FINATT(ITM)
 925  FORMAT(//////////,5X,
     156HF.1. CALIBRATION FACTORS  (FACTOR=GATE COUNT = ATTRACTIONS
     216H OR PRODUCTIONS) //12X,33H  EXTERIOR PRODUCTIONS   EXTERIOR
     359H ATTRACTIONS   INTERIOR PRODUCTIONS   INTERIOR ATTRACTIONS /
     4F25.3,3F23.3)
C
C   ZGENR AND ZATTR SUM THE PRODUCTIONS AND ATTRACTIONS AT EACH ZONE
      DO 509 IZ=1,NZONES
      ZGENR(IZ)= 0.0
      ZATTR(IZ)=0.0
      DO 508 IG=1,NGATE
      ZGENR(IZ)=OV(IZ,IG)+ZGENR(IZ)
 508  ZATTR(IZ)=VD(IZ,IG)+ZATTR(IZ)
 509   CONTINUE
      DO 59  ITER =1,4
C  FOR EACH COL, IG,  DETERMINE A FACTOR SO THAT THE SUM OF EACH COL IS
C  A GATE COUNT
      DO 55     IG=1,NGATE
      SOVIZ = 0.0
      SVDIZ = 0.0
      DO  51    IZ=NEXT1,NZONES
      SOVIZ = SOVIZ + OV(IZ,IG)
```

```
   51   SVDIZ = SVDIZ + VD(IZ,IG)
C  FACTOR EACH ELEMENT OF EACH COLUMN
        DO 52  IZ = NEXT1, NZONES
        IF(SOVIZ.NE.0.0)
       1OV(IZ, IG) = GCNT15(IG,1,ITM)/ SOVIZ * OV(IZ, IG)
        IF(SVDIZ.NE.0.0)
       1VD(IZ, IG) = GCNT15(IG,2,ITM)/ SVDIZ * VD(IZ, IG)
   52   CONTINUE
        SOVIZ = 0.0
        SVDIZ = 0.0
        DO  53  IZ= 1 , NEXT
        SOVIZ = SOVIZ + OV(IZ,IG)
   53   SVDIZ = SVDIZ + VD(IZ,IG)
        DO 54 IZ = 1   , NEXT
        IF(SOVIZ.NE.0.0)
       1OV(IZ, IG)  = GCNT15(IG,2,ITM)/SOVIZ = OV(IZ, IG)
        IF(SVDIZ.NE.0.0)
       1VD(IZ,IG) = GCNT15(IG,1,ITM)/ SVDIZ * VD(IZ,IG)
   54   CONTINUE
   55   CONTINUE
C  FACTOR EACH ELEMENT OF EACH ROW
C  FOR EACH ROW, IZ,  DETERMINE A FACTOR SO THAT THE SUM OF EACH ROW IS
C  A ZONE COUNT
C
        DO 58  IZ = 1, NZONES
        SOVIG =  0.0
        SVDIG =  0.0
        DO 56  IG = 1, NGATE
        SOVIG     =SOVIG    + OV(IZ,IG)
   56   SVDIG     =SVDIG    + VD(IZ,IG)
        DO 57  IG = 1, NGATE
        IF(SOVIG.NE.0.0)
       1OV(IZ, IG) = OV(IZ,IG)* ZGENR(IZ)/ SOVIG
        IF(SVDIG.NE.0.0)
       1VD(IZ, IG) = VD(IZ,IG)* ZATTR(IZ)/ SVDIG
   57   CONTINUE
   58   CONTINUE
   59   CONTINUE
C  THE INTERNAL-EXTERNAL TRIPS HAVE BEEN SMOOTHED.
C  THIS IS WHERE INT-INT TRIPS COULD BE SMOOTHED.
*       SUMOV=0.0
*       OVSUM=OVSUM/FINGEN(ITM)
*       VDSUM=VDSUM/FINATT(ITM)
*       TOTING=TOTGEN-OVSUM/FINGEN(ITM)
*       TOTINA=TOTATT-VDSUM/FINATT(ITM)
*       TOTING=(TOTINA+TOTING)/2.0
*       TOTINA=TOTING
*       SUMOV=0.0
*       SUMVD=0.0
*       DO 60 IZ=NEXT1,NZONES
*       SUMOV=SUMOV+OV(IZ,NGATE1)
*       SUMVD=SUMVD+VD(IZ,NGATE1)
*60     CONTINUE
*       FOV=(TOTING-SUMOV)/OVSUM
*       FVD=(TOTINA-SUMVD)/VDSUM
```

```
      *      DO 70 IZ=NEXT1,NZONES
      *      SMVD=0.0
      *      SMOV=0.0
      *      DO 65 IG=1,NGATE
      *      SMOV=SMOV+OV(IZ,IG)
      *      SMVD=SMVD+VD(IZ,IG)
      *65    CONTINUE
      *      OV(IZ,NGATE1)=OV(IZ,NGATE1)+FOV*SMOV
      *      VD(IZ,NGATE1)=VD(IZ,NGATE1)+FVD*SMVD
        70   CONTINUE
      *      PRINT 970,((OV(IZ,IG),IZ=1,NZONES),IG=1,NGATE1)
      *      PRINT 970,((VD(IZ,IG),IZ=1,NZONES),IG=1,NGATE1)
      C   GENERATE NUMBER OF VEHICLES PARKING IN EACH ZONE
             DO 31 IZ=1,NZONES
             ZGENR(IZ)=ZGENR(IZ)+OV(IZ,NGATE1)
             ZATTR(IZ)=ZATTR(IZ)+VD(IZ,NGATE1)
             ZV(IZ)=0.0
             VZ(IZ)=0.0
      C   ZV AND VZ STORE THE NUMBER OF VEHICLES WHICH PARK AT EACH INT ZONE
             DO 31 I=1,3
             ZV(IZ)=ZV(IZ)+ZGENR(IZ)*(VTYPM(I,IZ)+VEHTYP(I,IZ))/200.
             VZ(IZ)=VZ(IZ)+ZATTR(IZ)*(VTYPM(I,IZ)+VEHTYP(I,IZ))/200.
        31   CONTINUE
             DO 352 J=1,NZONES
             IZFLG = 0
             DO 35  Z =NEXT1, NZONES
      *   TEST FOR OVER CAPACITY DEMAND
             IF ( VZ(Z) - ZV(Z) .LE. PLA(Z)/PD  - PV (Z)) GO TO 35
      *   FIND             ZONE TO ROUTE VEHCLS WITH LARGEST ATTRACTION AND NOT
      *   OVER CAPACITY
             IZMAX = 0.0
             SVZ=0.0
             ZMAX = 0.0
      C      GET THE TOTAL OF ALL VEHICULAR TYPES GOING TO ZONE Z.
             DO 325 IG=1,NGATE1
       325   SVZ=SVZ+VD(Z,IG)
             DO 34  IZ =NEXT1, NZONES
             IF ( VZ(IZ)-ZV(IZ) .GE. PLA(IZ)/PD -PV(IZ)) GO TO 34
      *    IDENTIFY THE ZONE ATTRACTING THE MOST TRIPS
             IF(IZMAX .GE. VZ(IZ)) GO TO 331
             IZMAX = VZ(IZ)
             IZ2 = IZ
      *   SEARCH FOR A COMMON LINK BETWEEN IZ AND Z.
       331   DO 333 IZ3 = 1,12
             IF(ZLINKS(IZ3,IZ) .EQ. 0) GO TO 333
             DO 332 IZ4 = 1,12
             IF(ZLINKS(IZ4,Z) .EQ. 0) GO TO 332
             IF(IABS(ZLINKS(IZ3,IZ)).EQ. IABS(ZLINKS(IZ4,Z))) GO TO 335
       332   CONTINUE
       333   CONTINUE
             GO TO 34
       335   IF( ZMAX .GT. PLA(IZ)/PD-PV(IZ)-(VZ(IZ)-ZV(IZ)))GO TO 34
             ZMAX = ( PLA(IZ) / PD - PV(IZ) - (VZ(IZ) - ZV(IZ) ))
             IZ1 = IZ
        34   CONTINUE
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SUBROUTINE SMOOTH    TRACE                       CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE    6

           C    TEST FOR ANY ZONE WITH PARKING CAPACITY.
                  IF(IZMAX .EQ. 0.0) GO TO 353
           C    TEST FOR AN ADJACENT ZONE WITH PARKING CAPACITY.
                  IF(ZMAX .EQ. 0.0) IZ1 = IZ2
           C    VZC IS REMAINING CAPACITY.
                  VZC     =PLA(Z)/PD -PV(Z) + ZV(Z)
           C    EXCESS VEHICLES GO TO IZ1
                  VZX=VZ(Z)-VZC
                  VZ (IZ1)= VZ(IZ1) + VZX
           C    VZC GO TO Z TO BRING IT UP TO CAPACITY.
                  VZ(Z) = VZC
           C    SET IZFLG=1 INDICATING THERE ARE MORE POSSIBLE OVERCAPACITY ZONES.
                  IF(VZC .GT. 0.0) IZFLG = 1
                  DO 342 IG=1,NGATE1
           C    MODIFY THE VD ARRAY TO REFLECT CHANGE IN DESTINATIONS.
                  VD(IZ1,IG)=VD(IZ1,IG)+VZX*VD(Z,IG)/SVZ
            342   VD(Z,IG)=VD(Z,IG)-VZX*VD(Z,IG)/SVZ
            35    CONTINUE
                  IF(IZFLG .LE. 0) GO TO 353
            352   CONTINUE
            353   IF(IPFLG(3).NE.2.AND.IPFLG(3).NE.3.AND.IPFLG(3).NE.6
                 1.AND.IPFLG(3).NE.7) GO TO 354
                  PRINT 9999, (BAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5),
                 1TODS,TODE
                  PRINT 971, (IG,IG,IG=1,NGATE1)
            971   FORMAT(1H0,5X,
                 159HF.2. ORIGIN TO GATE (OG) AND GATE TO DESTINATION (GD) TRIPS
                 2/12X,52HAFTER APPLICATION OF CALIBRATION FACTORS AND PARKING
                 327H REROUTING (MOTOR VEHICLES)
                 4//7H  ZONE ,9(4H  OG,I1,4H  GD,I1),2(3H OG,I2,3H GD,I2))
                  DO 97 IZ=1,NZONES
            97    PRINT 970, ZNAME(IZ),(OV(IZ,IG),VD(IZ,IG),IG=1,NGATE1)
            970   FORMAT(3X,A2,2X,22F5.0)
             354  RETURN
                  END
```

SYMBOLIC REFERENCE MAP

ENTRY POINTS
1 SMOOTH

VARIABLES SN		TYPE		RELOCATION					
2	BAT	REAL	ARRAY	CHD	360	C	REAL	ARRAY	/ /
5500	CG	REAL	ARRAY	/ /	361	COEFD	REAL	ARRAY	TRIP
171	COEFO	REAL	ARRAY	TRIP	6	DOW	REAL		COMM
3024	FA	REAL		ZONES	2122	FCS	REAL	ARRAY	ZONES
1	FCSP	REAL	ARRAY	TRIP	50	FEXATT	REAL	ARRAY	COMM
44	FEXGEN	REAL	ARRAY	COMM	60	FINATT	REAL	ARRAY	COMM
54	FINGEN	REAL	ARRAY	COMM	2742	FP	REAL		ZONES
2742	FRAMIL	REAL	ARRAY	ZONES	171	GCNT15	REAL	ARRAY	GATE
145	GCOUNT	REAL	ARRAY	GATE	1714	GCSUM1	REAL		
1721	GCSUM2	REAL			0	I	INTEGER		COMM
37	IFCSIZ	INTEGER	ARRAY	TRIP	1716	IG	INTEGER		
1726	II	INTEGER			31	IOPT	INTEGER	ARRAY	COMM
24	IPFLG	INTEGER	ARRAY	COMM	1727	ITER	INTEGER		
13	ITM	INTEGER		COMM	1720	IZ	INTEGER		
1734	IZFLG	INTEGER			1735	IZMAX	INTEGER		
1743	IZ1	INTEGER			1740	IZ2	INTEGER		
1741	IZ3	INTEGER			1742	IZ4	INTEGER		
3	J	INTEGER		COMM	4	K	INTEGER		COMM
2	L	INTEGER		COMM	1	LGATE	INTEGER	ARRAY	GATE
15	LHEAD	INTEGER	ARRAY	COMM	40	NCLB	INTEGER		COMM
7	NDAY	INTEGER		CHD	42	NDEMVC	INTEGER		COMM
1357	NEXT	INTEGER		ZONES	3106	NEXT1	INTEGER		ZONES
0	NGATE	INTEGER		GATE	311	NGATE1	INTEGER		GATE
6	NMO	INTEGER		CHD	43	NNAME	INTEGER		COMM
37	NPLT	INTEGER		COMM	41	NPLU	INTEGER		COMM
13616	NTD	INTEGER	ARRAY	/ /	12240	NTO	INTEGER	ARRAY	/ /
0	NTRIP	INTEGER		TRIP	455	NTRIPC	INTEGER		TRIP
265	NVARD	INTEGER	ARRAY	TRIP	75	NVARO	INTEGER	ARRAY	TRIP
14	NYEAR	INTEGER		COMM	5	NYR	INTEGER		CHD
1	NZLINKS	INTEGER	ARRAY	ZONES	0	NZONES	INTEGER		ZONES
15174	OV	REAL	ARRAY	/ /	1717	OVSU	REAL		
1715	OVSUM1	REAL			1725	OVSUM2	REAL		
311	PD	REAL		PARKZ	63	PLA	REAL	ARRAY	PARKZ
313	PLBO	REAL		PARKZ	376	PLL	REAL	ARRAY	PARKZ
312	PLS	REAL		PARKZ	314	PNOS	INTEGER	ARRAY	PARKZ
56	PURP	REAL	ARRAY	TRIP	1	PV	REAL	ARRAY	PARKZ
0	PZ	INTEGER		PARKZ	0	R	INTEGER	ARRAY	/ /
740	RG	INTEGER	ARRAY	/ /	1732	SOVIG	REAL		
1730	SOVIZ	REAL			1733	SVDIG	REAL		
1731	SVDIZ	REAL			1736	SVZ	REAL		
5	TOD	REAL		COMM	0	TODE	REAL		CHD
1	TODS	REAL		CHD	10	TOTATT	REAL		COMM
12	TOTGEN	REAL		COMM	7	TP	REAL		COMM
64	TP15	REAL		COMM	11	TTPZ	REAL		COMM
25	VCR	REAL	ARRAY	GATE	16242	VD	REAL	ARRAY	/ /
1723	VDSU	REAL			1722	VDSUM1	REAL		
1724	VDSUM2	REAL			1364	VEHTYP	REAL	ARRAY	ZONES
2204	VTYPM	REAL	ARRAY	ZONES	145	VZ	REAL	ARRAY	PARKZ

```
      SUBROUTINE  SMOOTH     TRACE                              CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE      8

VARIABLES       SN  TYPE             RELOCATION
  1744  VZC         REAL                             1745  VZX        REAL
    27  XP          INTEGER                COMM        30  YP         INTEGER              COMM
     1  Z           INTEGER                COMM      1360  ZAT        REAL       ARRAY     ZONES
  1213  ZATTR       REAL        ARRAY      ZONES     1275  ZGENR      REAL       ARRAY     ZONES
  1362  ZGT         REAL        ARRAY      ZONES       63  ZLINKS     INTEGER    ARRAY     ZONES
  1737  ZMAX        REAL                             2040  ZNAME      INTEGER    ARRAY     ZONES
   227  ZV          REAL        ARRAY      PARKZ

FILE NAMES          MODE
        OUTPUT       FMT

EXTERNALS            TYPE   ARGS
         IABS       INTEGER    1

STATEMENT LABELS
     0  10                          0  11                                0  12
   116  13                          0  14                              140  15
     0  16                          0  17                                0  18
   254  19                          0  20                              276  21
     0  22                          0  23                                0  24
     0  25                          0  31                             1402  34
  1504  35                          0  51                                0  52
     0  53                          0  54                                0  55
     0  56                          0  57                                0  58
     0  59                          0  70          INACTIVE              0  97
   365  231                       455  253                               0  254
     0  255                       563  259                               0  325
  1310  331                      1346  332                            1351  333
  1354  335                         0  342                               0  352
  1515  353                      1616  354                               0  508
     0  509                      1633  925      FMT                   1707  970      FMT
  1661  971     FMT              1622  9999     FMT

COMMON BLOCKS    LENGTH
         COMM        53
         PARKZ      304
         ZONES     1607
         TRIP       302
         GATE       202
         / /       7880
         CHD          8

STATISTICS
  PROGRAM LENGTH    1746B      998
   COMMON LENGTH    4654B     2476
    BLANK COMMON   17310B     7880
```

```
      SUBROUTINE LETTER(NYEAR,LHEAD)
      DIMENSION LHEAD(7)
      DIMENSION ITITLE(12)                                            SCRINV3
      WRITE(6,6001)                                                   SCRINV3
 6001 FORMAT(1H1)                                                     SCRINV3
      ITLE=10H BATS MODE
      DECODE(10,9100,ITLE) (ITITLE(I),I=1,10)
      ITITLE(11)=1HL
      CALL CHARAC(ITITLE)                                             SCRINV3
      DECODE(12,9100,LHEAD) (ITITLE(I),I=1,12)
      WRITE(6,6002)                                                   SCRINV3
 6002 FORMAT(1H-)                                                     SCRINV3
      CALL CHARAC(ITITLE)
      WRITE(6,6002)                                                   SCRINV3
      DECODE(12,9100,LHEAD(3)) (ITITLE(I),I=1,12)
      CALL CHARAC(ITITLE)
 9100 FORMAT(12A1)
      WRITE(6,6002)
      ENCODE(10,9101,ITLE) NYEAR
 9101 FORMAT(I8)
      DECODE(10,9100,ITLE) ITITLE(1),ITITLE(2),ITITLE(9),
     1 ITITLE(10),ITITLE(6),ITITLE(7),ITITLE(3),ITITLE(4),ITITLE(11),
     2 ITITLE(12)
      ITITLE(5)=1H
      ITITLE(8)=1H
      CALL CHARAC(ITITLE)
      WRITE(6,6001)                                                   SCRINV3
      CALL TOFC
      RETURN                                                          SCRINV3
      END                                                             SCRINV3
```

```
      SUBROUTINE  LETTER    TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE     2

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  LETTER

VARIABLES      SN  TYPE           RELOCATION
  160  I            INTEGER                             161  ITITLE    INTEGER    ARRAY
  157  ITLE         INTEGER                               0  LHEAD     INTEGER    ARRAY     F.P.
    0  NYEAR        INTEGER              F.P.

FILE NAMES          MODE
      TAPE6         FMT

EXTERNALS            TYPE   ARGS
      CHARAC                  1                           TOFC               0

STATEMENT LABELS
  143  6001     FMT                        145  6002    FMT                          147  9100    FMT
  151  9101     FMT

STATISTICS
  PROGRAM LENGTH     202B      130
```

```
      SUBROUTINE CHARAC(ITITLE)                                        SCRINV3
       DIMENSION ICHAR(37,12),IALPHA(37),ID(12),ITITLE(12),MASK(11),   SCRINV3
     .LINE1(135)                                                       SCRINV3
      INTEGER OFFSET                                                   SCRINV3
      DATA(ICHAR(01,K),K=1,12)/                                        SCRINV3
     .0160B,0370B,0614B,1406B,1406B,1406B,1776B,1776B,1406B,1406B,     SCRINV3
     .1406B,1406B/                                                     SCRINV3
      DATA(ICHAR(2,K),K=1,12)/                                         SCRINV3
     .1770B,1774B,1406B,1406B,1406B,1774B,1774B,1406B,1406B,1406B,     SCRINV3
     .1774B,1770B/                                                     SCRINV3
      DATA(ICHAR(03,K),K=1,12)/                                        SCRINV3
     .0376B,0776B,1600B,1400B,1400B,1400B,1400B,1400B,1400B,1600B,     SCRINV3
     .0776B,0376B/                                                     SCRINV3
      DATA(ICHAR(04,K),K=1,12)/                                        SCRINV3
     .1770B,1774B,1416B,1406B,1406B,1406B,1406B,1406B,1406B,1416B,     SCRINV3
     .1774B,1770B/                                                     SCRINV3
      DATA(ICHAR(05,K),K=1,12)/                                        SCRINV3
     .2*1776B,3*1400B,2*1774B,3*1400B,2*1776B/                         SCRINV3
      DATA(ICHAR(06,K),K=1,12)/                                        SCRINV3
     .2*1776B,3*1400B,2*1774B,5*1400B/                                 SCRINV3
      DATA(ICHAR(07,K),K=1,12)/                                        SCRINV3
     .0376B,0776B,3*1400B,1434B,1476B,3*1406B,0776B,0374B/             SCRINV3
      DATA(ICHAR(08,K),K=1,12)/                                        SCRINV3
     .1406B,1406B,1406B,1406B,1406B,1776B,1776B,1406B,1406B,1406B,     SCRINV3
     .1406B,1406B/                                                     SCRINV3
      DATA(ICHAR(09,K),K=1,12)/                                        SCRINV3
     .1776B,1776B,0160B,0160B,0160B,0160B,0160B,0160B,0160B,0160B,     SCRINV3
     .1776B,1776B/                                                     SCRINV3
      DATA(ICHAR(10,K),K=1,12)/                                        SCRINV3
     .0176B,0176B,6*0030B,2*1430B,1770B,0760B/                         SCRINV3
      DATA(ICHAR(11,K),K=1,12)/                                        SCRINV3
     .1406B,1414B,1430B,1460B,1540B,2*1700B,1540B,1460B,1430B,1414B,   SCRINV3
     .1406B/                                                           SCRINV3
      DATA(ICHAR(12,K),K=1,12)/                                        SCRINV3
     .10*1400B,2*1776B/                                                SCRINV3
      DATA(ICHAR(13,K),K=1,12)/                                        SCRINV3
     .1406B,1616B,1736B,2*1566B,1446B,6*1406B/                         SCRINV3
      DATA(ICHAR(14,K),K=1,12)/                                        SCRINV3
     .1406B,1406B,1606B,1706B,2*1546B,2*1466B,1433B,1416B,1406B,1406B/ SCRINV3
      DATA(ICHAR(15,K),K=1,12)/                                        SCRINV3
     .0370B,0774B,8*1406B,0774B,0370B/                                 SCRINV3
      DATA(ICHAR(16,K),K=1,12)/                                        SCRINV3
     .1770B,1774B,2*1406B,1774B,1770B,6*1400B/                         SCRINV3
      DATA(ICHAR(17,K),K=1,12)/                                        SCRINV3
     .0370B,0774B,6*1406B,1466B,1436B,0774B,0370B/                     SCRINV3
      DATA(ICHAR(18,K),K=1,12)/                                        SCRINV3
     .1770B,1774B,2*1406B,1774B,1770B,1540B,1460B,1430B,1414B,2*1406B/ SCRINV3
      DATA(ICHAR(19,K),K=1,12)/                                        SCRINV3
     .0376B,0776B,3*1400B,0770B,0374B,3*0006B,1774B,1770B/             SCRINV3
      DATA(ICHAR(20,K),K=1,12)/                                        SCRINV3
     .2*1776B,10*0160B/                                                SCRINV3
      DATA(ICHAR(21,K),K=1,12)/                                        SCRINV3
     .10*1406B,0774B,0370B/                                            SCRINV3
      DATA(ICHAR(22,K),K=1,12)/                                        SCRINV3
     .7*1406B,2*0614B,0330B,0160B,0040B/                               SCRINV3
```

```
          DATA(ICHAR(23,K),K=1,12)/                                           SCRINV3
         .6*1406B,1446B,2*1566B,1736B,1616B,1406B/                            SCRINV3
          DATA(ICHAR(24,K),K=1,12)/                                           SCRINV3
         .2*1406B,0614B,0330B,4*0160B,0330B,0614B,2*1406B/                    SCRINV3
          DATA(ICHAR(25,K),K=1,12)/                                           SCRINV3
         .3*1406B,2*0614B,0330B,6*0160B/                                      SCRINV3
          DATA(ICHAR(26,K),K=1,12)/                                           SCRINV3
         .2*1776B,0006B,0014B,0030B,0060B,0140B,0300B,0600B,1400B,2*1776B/    SCRINV3
          DATA(ICHAR(27,K),K=1,12)/                                           SCRINV3
         .12*0/                                                               SCRINV3
          DATA(ICHAR(28,K),K=1,12)/                                           SCRINV3
         .2*1776B,8*1406B,2*1776B/                                            SCRINV3
          DATA(ICHAR(29,K),K=1,12)/                                           SCRINV3
         .0060B,0160B,0360B,7*0060B,2*0776B/                                  SCRINV3
          DATA(ICHAR(30,K),K=1,12)/                                           SCRINV3
         .2*1774B,3*0014B,0030B,0060B,0140B,0300B,0600B,2*1776B/              SCRINV3
          DATA(ICHAR(31,K),K=1,12)/                                           SCRINV3
         .2*1776B,3*0006B,2*0376B,3*0006B,2*1776B/                            SCRINV3
          DATA(ICHAR(32,K),K=1,12)/                                           SCRINV3
         .0016B,0036B,0066B,0146B,0306B,0776B,1776B,5*0006B/                  SCRINV3
          DATA(ICHAR(33,K),K=1,12)/                                           SCRINV3
         .2*1776B,2*1400B,2*1776B,4*0006B,2*1776B/                            SCRINV3
          DATA(ICHAR(34,K),K=1,12)/                                           SCRINV3
         .2*1776B,3*1400B,2*1776B,3*1406B,2*1776B/                            SCRINV3
          DATA(ICHAR(35,K),K=1,12)/                                           SCRINV3
         .2*1776B,2*0006B,0014B,2*0030B,5*0060B/                              SCRINV3
          DATA(ICHAR(36,K),K=1,12)/                                           SCRINV3
         .2*1776B,3*1406B,2*1776B,3*1406B,2*1776B/                            SCRINV3
          DATA(ICHAR(37,K),K=1,12)/                                           SCRINV3
         .2*1776B,3*1406B,2*1776B,3*0006B,2*1776B/                            SCRINV3
          DATA IALPHA/1HA,1HB,1HC,1HD,1HE,1HF,1HG,1HH,1HI,1HJ,1HK,1HL,1HM,    SCRINV3
         .1HN,1HO,1HP,1HQ,1HR,1HS,1HT,1HU,1HV,1HW,1HX,1HY,1HZ,1H ,1H0,1H1,    SCRINV3
         .1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9/                                    SCRINV3
          DATA LINE1/135*1H /                                                 SCRINV3
          DATA MASK/2000B,1000B,400B,200B,100B,40B,20B,10B,4B,2B,1B/          SCRINV3
          DO 150 IJ=1,12                                                      SCRINV3
          J= 13-IJ                                                            SCRINV3
          IF(ITITLE(J).NE.IALPHA(27)) GO TO 70                                SCRINV3
      150 CONTINUE                                                            SCRINV3
       70 CONTINUE                                                            SCRINV3
          NUMLET=J                                                            SCRINV3
          OFFSET=(12-NUMLET)*6                                                SCRINV3
          DO 250 LJ=1,12                                                      SCRINV3
          ITEST=0                                                             SCRINV3
          DO 251 JK=1,37                                                      SCRINV3
          IF(ITITLE(LJ).EQ.IALPHA(JK)) ITEST=1                                SCRINV3
          IF(ITEST.EQ.0) GO TO 251                                            SCRINV3
          ID(LJ)=JK                                                           SCRINV3
          GO TO 250                                                           SCRINV3
      251 CONTINUE                                                            SCRINV3
          ID(LJ)= 27                                                          SCRINV3
      250 CONTINUE                                                            SCRINV3
          DO 2000 LNCNT=1,12                                                  SCRINV3
          DO 1000 LPOS=1,12                                                   SCRINV3
          IPOS=(11*(LPOS-1))+ OFFSET                                          SCRINV3
```

```
SUBROUTINE  CHARAC    TRACE                        CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE      3
                DO 1200 MAKEUP=1,11                                                       SCRINV3
                LTEST=ICHAR(ID(LPOS),LNCNT).AND.MASK(MAKEUP)                              SCRINV3
                 IF(LTEST.EQ.0) GO TO 1200                                                SCRINV3
                LINE1(IPOS+MAKEUP)=1HO                                                    SCRINV3
           1200 CONTINUE                                                                  SCRINV3
           1000 CONTINUE                                                                  SCRINV3
                WRITE(6,200)(LINE1(JQ),JQ=1,135)                                          SCRINV3
                DO 600 IK=1,135                                                           SCRINV3
            600 IF(LINE1(IK).EQ.1HO) LINE1(IK)=1HX                                        SCRINV3
                WRITE(6,201)(LINE1(JQ),JQ=1,135)                                          SCRINV3
                DO 601 IK=1,135                                                           SCRINV3
            601 IF(LINE1(IK).EQ.1HX) LINE1(IK)=1HA                                        SCRINV3
                WRITE(6,201)(LINE1(JQ),JQ=1,135)                                          SCRINV3
                DO 602 IK=1,135                                                           SCRINV3
            602 IF(LINE1(IK).EQ.1HA)LINE1(IK)=1HV                                         SCRINV3
                WRITE(6,201) (LINE1(JQ),JQ=1,135)                                         SCRINV3
            201 FORMAT(1H+,135A1)                                                         SCRINV3
            200 FORMAT(1H ,135A1)                                                         SCRINV3
                DO 106 I=1,135                                                            SCRINV3
                LINE1(I)=1H                                                               SCRINV3
            106 CONTINUE                                                                  SCRINV3
           2000 CONTINUE                                                                  SCRINV3
                RETURN                                                                    SCRINV3
                END                                                                       SCRINV3
```

```
      SUBROUTINE  CHARAC    TRACE                      CDC 6700 FTN V3.0-355F OPT=0  79/06/17. 15.49.02.        PAGE     4

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  CHARAC

VARIABLES       SN  TYPE            RELOCATION
  251  I            INTEGER                            1146  IALPHA     INTEGER     ARRAY
  252  ICHAR        INTEGER       ARRAY                1213  ID         INTEGER     ARRAY
  234  IJ           INTEGER                             250  IK         INTEGER
  244  IPOS         INTEGER                             240  ITEST      INTEGER
    0  ITITLE       INTEGER       ARRAY      F.P.       235  J          INTEGER
  241  JK           INTEGER                             247  JQ         INTEGER
 1242  LINE1        INTEGER       ARRAY                 237  LJ         INTEGER
  242  LNCNT        INTEGER                             243  LPOS       INTEGER
  246  LTEST        INTEGER                             245  MAKEUP     INTEGER
 1227  MASK         INTEGER       ARRAY                 236  NUMLET     INTEGER
  233  OFFSET       INTEGER

FILE NAMES          MODE
       TAPE6         FMT

STATEMENT LABELS
   30  70                                   0  106                                        0  150
  224  200      FMT                       222  201     FMT                               63  250
   55  251                                  0  600                                        0  601
    0  602                                  0  1000                                     113  1200
    0  2000

STATISTICS
  PROGRAM LENGTH     1454B      812
```

```
      SUBROUTINE SUMIT
      COMMON /VOLUME/ COUNT(18,240)
      COMMON /COMM/ I,Z,L,J,K,TOD,DOW,TP,TOTATT,TTPZ,TOTGEN,ITM,NYEAR,
     1LHEAD(7),NZR,IPFLG,XP,YP,IOPT
      INTEGER Z
      COMMON /LINK/ NLINK,NLANE(240),X1(240),Y1(240),X2(240),Y2(240),
     1LCAP(240),DIST(240),VEL(240),LCON(240,3),HEIGHT(240),NSTOPS(240)
      COMMON /ZONES/NZONES,NZLINKS(50),ZLINKS(12,50),ZATTR(50),ZGENR(50)
     1,NEXT,ZAT(2),ZGT(2),VEHTYP(6,50),ZNAME(50),FCS(50),VTYPM(7,50),
     2FRAMIL(50,2),NEXT1
      INTEGER ZLINKS,ZNAME
      COMMON R(240),C(240),RG(10,240),CG(10,240)
      COMMON NTO(50,15),NTD(50,15),OV(50,11),VD(50,11)
      COMMON L1,LG,I1,I2,DIV,ZVEH(7),ZVEHM(7),CT
C         FIND THE CONNECTION GOING STRAIGHT, RIGHT OR LEFT.
      DO 6 J=1,3
      IF (LCON(LG,J).NE.L1) GO TO 6
      IF (I1.LT.I2) GO TO 3
      I3=1
      I4=6
      GO TO 4
    3 I3=I1
      I4=I2
    4 DO 5 I=I3,I4
      IF (I1.GT.I2.AND.I.GE.I2.AND.I.LE.I1) GO TO 5
      COUNT(J,LG)=COUNT(J,LG)+(ZVEH(I)+ZVEHM(I))/DIV
      COUNT(I+4,LG)=COUNT(I+4,LG)+ZVEH(I)/DIV
      COUNT(I+10,LG)=COUNT(I+10,LG)+ZVEHM(I)/DIV
      IF (CT.GT.505.) GO TO 5
      COUNT(17,LG)=COUNT(17,LG)+(ZVEH(I)+ZVEHM(I))/DIV*FCS(Z)
      COUNT(18,LG)=COUNT(18,LG)+(ZVEH(I)+ZVEHM(I))/DIV*(1.-FCS(Z))
    5 CONTINUE
      GO TO 8
    6 CONTINUE
      PRINT 7,ZNAME(Z),LG,L1
    7 FORMAT (21H ILLEGAL ROUTE-ZONE: ,A2,5H,LINK I3,6H TO LINK I3)
    8 RETURN
      END
```

```
         SYMBOLIC REFERENCE MAP

ENTRY POINTS
    1   SUMIT

VARIABLES    SN  TYPE              RELOCATION
  360   C        REAL      ARRAY   / /           5500  CG        REAL      ARRAY   / /
    0   COUNT    REAL      ARRAY   VOLUME       17333  CT        REAL              / /
 2641   DIST     REAL      ARRAY   LINK         17314  DIV       REAL              / /
    6   DOW      REAL              COMM          2122  FCS       REAL      ARRAY   ZONES
 2742   FRAMIL   REAL      ARRAY   ZONES         5121  HEIGHT    REAL      ARRAY   LINK
    0   I        INTEGER           COMM            30  IOPT      INTEGER           COMM
   25   IPFLG    INTEGER           COMM            13  ITM       INTEGER           COMM
17312   I1       INTEGER           / /          17313  I2        INTEGER           / /
  174   I3       INTEGER                          175  I4        INTEGER
    3   J        INTEGER           COMM             4  K         INTEGER           COMM
    2   L        INTEGER           COMM          2261  LCAP      INTEGER   ARRAY   LINK
 3601   LCON     INTEGER   ARRAY   LINK         17311  LG        INTEGER           / /
   15   LHEAD    INTEGER   ARRAY   COMM         17310  L1        INTEGER           / /
 1357   NEXT     INTEGER           ZONES         3106  NEXT1     INTEGER           ZONES
    1   NLANE    INTEGER   ARRAY   LINK             0  NLINK     INTEGER           LINK
 5501   NSTOPS   INTEGER   ARRAY   LINK         13616  NTD       INTEGER   ARRAY   / /
12240   NTO      INTEGER   ARRAY   / /             14  NYEAR     INTEGER           COMM
    1   NZLINKS  INTEGER   ARRAY   ZONES            0  NZONES    INTEGER           ZONES
   24   NZR      INTEGER           COMM         15174  OV        REAL      ARRAY   / /
    0   R        REAL      ARRAY   / /            740  RG        REAL      ARRAY   / /
    5   TOD      REAL              COMM            10  TOTATT    REAL              COMM
   12   TOTGEN   REAL              COMM             7  TP        REAL              COMM
   11   TTPZ     REAL              COMM         16242  VD        REAL      ARRAY   / /
 1364   VEHTYP   REAL      ARRAY   ZONES         3221  VEL       REAL      ARRAY   LINK
 2204   VTYPM    REAL      ARRAY   ZONES           26  XP        REAL              COMM
  361   X1       REAL      ARRAY   LINK          1321  X2        REAL      ARRAY   LINK
   27   YP       REAL              COMM           741  Y1        REAL      ARRAY   LINK
 1701   Y2       REAL      ARRAY   LINK             1  Z         INTEGER           COMM
 1360   ZAT      REAL      ARRAY   ZONES         1213  ZATTR     REAL      ARRAY   ZONES
 1275   ZGENR    REAL      ARRAY   ZONES         1362  ZGT       REAL      ARRAY   ZONES
   63   ZLINKS   INTEGER   ARRAY   ZONES         2040  ZNAME     INTEGER   ARRAY   ZONES
17315   ZVEH     REAL      ARRAY   / /          17324  ZVEHM     REAL      ARRAY   / /

FILE NAMES      MODE
        OUTPUT   FMT

STATEMENT LABELS
   20  3                        24  4                                  141  5
  145  6                       163  7        FMT                       162  8

COMMON BLOCKS   LENGTH
        VOLUME    4320
        COMM        25
        LINK      3121
        ZONES     1607
        / /       7900
```

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STATISTICS
  PROGRAM LENGTH     176B      126
   COMMON LENGTH   21561B     9073
    BLANK COMMON   17334B     7900
```

```
      SUBROUTINE ASSIGN
      COMMON /COMM/ I,Z,L,J,K,TOD,DOW,TP,TOTATT,TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU,NDEMVC
     2,NNAME,FEXGEN(4),FEXATT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /LINK/ NLINK,NLANE(240),X1(240),Y1(240),X2(240),Y2(240),
     1LCAP(240),DIST(240),VEL(240),LCON(240,3),HEIGHT(240),NSTOPS(240)
      COMMON /ZONES/NZONES,NZLINKS(50),ZLINKS(12,50),ZATTR(50),ZGENR(50)
     1,NEXT,ZAT(2),ZGT(2),VEHTYP(6,50),ZNAME(50),FCS(50),VTYPM(7,50),
     2FRAMIL(50,2),NEXT1,LANDU(50)
      INTEGER ZLINKS,ZNAME
      COMMON /TRIP/ NTRIP,FCSP(15,2),IFCSIZ(15),PURP(15),NVARO(4,15)
     1,COEFO(4,15),NVARD(4,15),COEFD(4,15),NTRIPC
     2,LANDO(4,15),LANDD(4,15),PLUALU(6,6,3)
      COMMON /GATE/ NGATE,LGATE(2,10),VCR(10,2,4),GCOUNT(2,10),
     1GCNT15(10,2,4),NGATE1
      COMMON /VOLUME/ COUNT(18,240)
      COMMON /TROUT/ IGT,ITYP1,ITYP2,ITOZ(50),ITDZ(50),ITR(96)
      COMMON /PARKZ/ PZ,PV(50),PLA(50),VZ(50),ZV(50),PD,PLS,PLBO,
     1PNOS(50),PLL(50)
      INTEGER PNOS,PZ
      COMMON R(240),C(240),RG(10,240),CG(10,240)
      INTEGER R,RG
      COMMON /RESLT/ TT(240,3),DELA(240,3),PRT(50),QUEUE(240)
      COMMON  NTO(50,15),NTD(50,15),OV(50,11),VD(50,11)
      DIMENSION ZVEH(7),ZVEHM(7),ZVEH1(7),ZVEHM1(7),ZVEH2(7),ZVEHM2(7)
     1,SNTD(15)
      COMMON LI,LG,I1,I2,DIV,ZVEH,ZVEHM,CTOT
      COMMON /CHD/ TODE,TODS,BAT(3),NYR,NMO,NDAY
      DIMENSION SCT(18)
       EQUIVALENCE (ZVEH,ZVEH1,ZVEH2),(ZVEHM,ZVEHM1,ZVEHM2)
      DATA (SCT(I),I=1,18)/18*0.0/
*     PRINT 910,(PURP(I),I=1,9),(ZNAME(IZ),(NTO(IZ,J),J=1,9),
*    1 (NTD(IZ,J),J=1,9),IZ=NEXT1,NZONES)
*910  FORMAT(9A10/(1XA2,I8,8I10/1X 9I10))
      DO 10 L=1,NLINK
      DO 10 J=4,18
   10 COUNT(J,L)=0.0
C   ADD A GATE TRAVEL TIME SO VEHICLES DO NOT DRIVE OFF BASE AND
C   BACK ON TO SAVE A MINUTE
      DO 11 IG=1,NGATE
      DO 11 I = 1,2
      L=LGATE(I,IG)
      DO 11 J=1,3
 11   TT(L,J)=TT(L,J)+60.
C LOOP OVER ALL ORIGIN ZONES (IZ)
*     PRINT 91, (IZ,FRAMIL(IZ,1),FRAMIL(IZ,2),IZ=1,NZONES)
*  91 FORMAT(25H ZONE  MIL PROD  MIL-ATTR, (I4,2F9.5))
      IF(IPFLG(3).GE.4) PRINT 9999,BAT,NYR,NMO,NDAY,(LHEAD(I),I=1,5)
     1,TODS,TODE
      IF(IPFLG(3).GE.4)
     1PRINT 9999, (BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
     1TODS,TODE
      IF(IPFLG(3).GE.4) PRINT 91
 91   FORMAT(1H05X*G.1. ASSIGNMENT COUNTS AND ASSCIATED COMPUTER RUN*
```

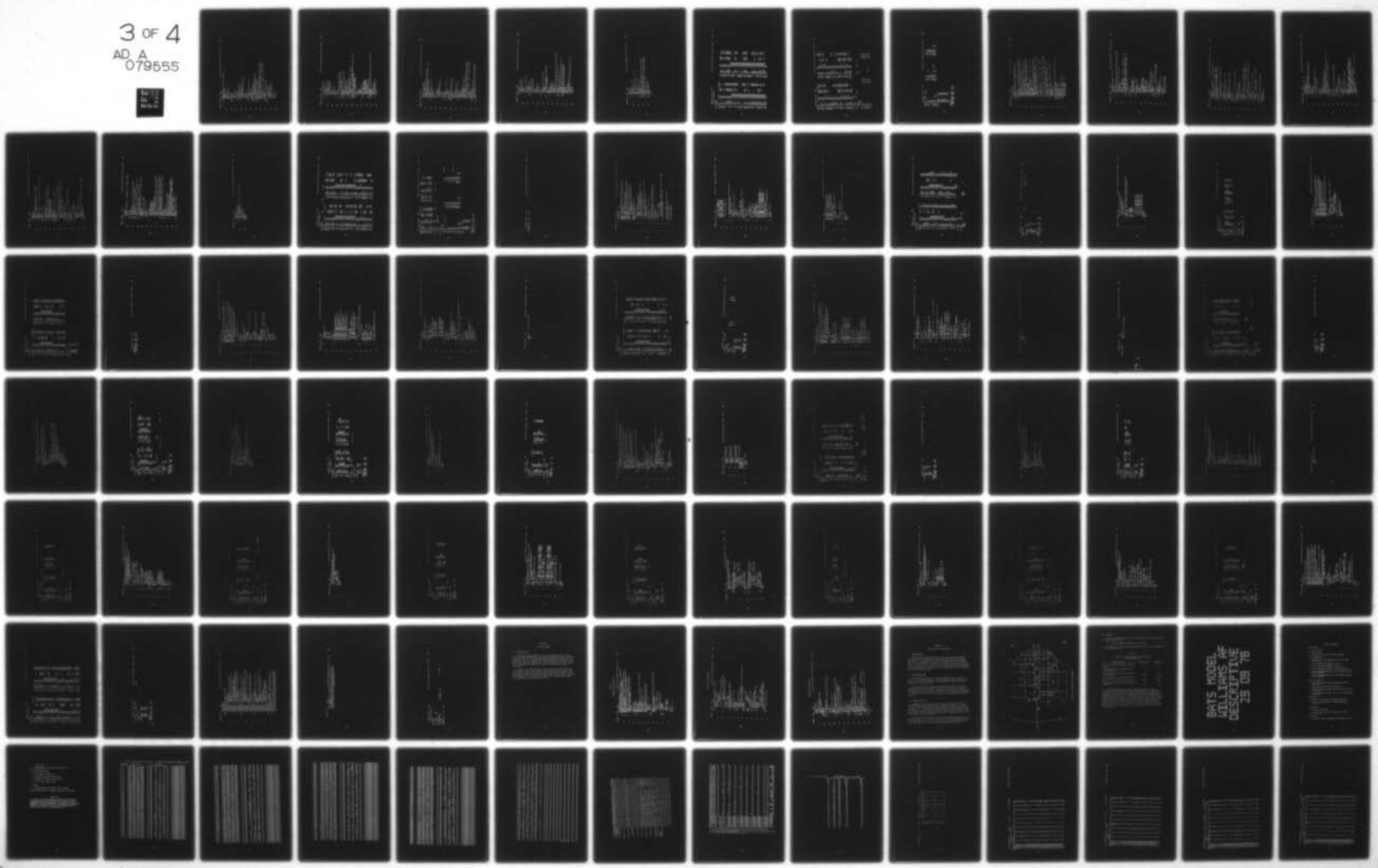
```
     1* TIMES*/92HOZONE   ASSGN. VEH.      ASSGN.VEH.      ASSGN. VEH.
     2    ASSIGNMENT   TOTAL    NO. PATHS   /9X,46HORG. TO GATES    GA
     3TES TO DEST.   INTERNAL O-D 8X,*TIME*7X*TIME*5X*FOLLOWED*)
      CALL SECOND(RT1)
      DO 70 IZ=1 ,NZONES
      SZTRIP=0.
      SZTRIP1=0.
      NZTRIP1=0.
      NOD=0
      SOD=0.
C FIND ROUTES AND COSTS FROM IZ TO EACH LINK VIA SUBROUTINE MINPATH
      IF (IZ.LE.NEXT) GO TO 14
      PTT=PLL(IZ)/22.0
      PTTA=PTT
      CALL MNPATH (ZLINKS(1,IZ),NZLINKS(IZ),PTT,PTTA)
      GO TO 15
   14 CALL MNPATH (ZLINKS(1,IZ),NZLINKS(IZ),PLA(IZ),PV(IZ))
   15 IORE=2
      IF(IZ.GT.NEXT) IORE=1
C DO CALCULATIONS FOR TRAFFIC TO ALL GATES (IG)
      DO 60 IG=1,NGATE
C CALCULATE NUM ER OF VEHICLE TRIPS FROM ZONE TO GATE (ZTRIP)
      ZTRIP=OV(IZ,IG)
      SZTRIP=SZTRIP+ZTRIP
      IF(ZTRIP.LE.O.) GO TO 24
C IF IZ IS EXTERNAL (IZ>NEXT) SET LAST LINK IN PATH TO GATE (L) EQUAL
C TO LGATE(1,IG); OTHERWISE SET EQUAL TO LGATE(1,IG)
      IF (IZ .GT. NEXT)  L=LGATE(1,IG)
      IF (IZ .LE. NEXT)  L=LGATE(2,IG)
      LGS=L
C FIND NUMBER OF PERSONS PER VEHICLE (SPPH/100)
      SVTP= 0.
      SVTPM=0.
C          COMPUTATION WITHOUT BUSES.
      DO 19 I=1,6
      SVTP=SVTP+VEHTYP(I,IZ)
      SVTPM=SVTPM+VTYPM(I,IZ)
   19 CONTINUE
C FIND NUMBER OF VEHICLE TRIPS BY TYPE (ZVEH)
      DO 20 I=1,6
      ZVEH(I)=0.0
      ZVEHM(I)=0.0
      IF(SVTP.GT.0.0)
     1ZVEH(I)=ZTRIP*(1.-FRAMIL(IZ,1))*VEHTYP(I,IZ)/SVTP
      IF(SVTPM.GT.0.0) ZVEHM(I)=ZTRIP*FRAMIL(IZ,1)*VTYPM(I,IZ)/SVTPM
   20 CONTINUE
C  ADD BUSES.
      IF (ZGENR(IZ).GT.0.)
     1ZVEHM(5)=ZVEHM(5)+VTYPM(7,IZ)*ZTRIP/ZGENR(IZ)
C LOOP THRU THIS POINT FOR LINKS BACK FROM GATE TO ORIGIN ZONE
C
C          CHECK FOR TRUCK ROUTE AND APPLY VEHICLES OF THE SPECIFIED
C     TYPE TO THIS ROUTE.
C
      Z=IZ
```

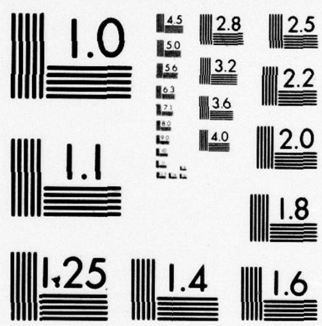
```
      I1=1
      I2=6
      IF (IGT.NE.IG) GO TO 21
      IF (ITOZ(IZ).EQ.0) GO TO 21
      I1=ITYP1
      I2=ITYP2
      I3=ITOZ(IZ)-1
      I4=I3+1
      DO 201 I5=1,I3
      LG=ITR(I5+1)
      CTOT=C(LG)
      DIV=1.0
      LI=ITR(I5)
  201 CALL SUMIT
   21 CONTINUE
C FIND LINK PREVIOUS TO L  ON THE ROUTE FROM GATE BACK TO IZ (LG) FROM
C THE R ARRAY
      LG=R(L)
C IF L IS THE LAST LINK (LG=0) GO TO 24
      IF (LG .LE. 0) GO TO 24
      IF (R(LG).GT.0)GO TO 236
C         DO SEARCH FOR ALTERNATE ROUTE FROM ZONE IZ.
C ASSUME THE GATE COUNTS ARE APPLIED BY THE DESTINATION ZONE LOOP
C
      NZ=NZLINKS(IZ)
      DO 221 LZ=1,NZ
      LZ2=ZLINKS(LZ,IZ)
      IF (LZ2.LE.0) GO TO 221
      DO 22 J=1,3
      IF (LCON(LZ2,J).NE.L.OR.LZ2.EQ.LG) GO TO 22
      CTOT=C(LG)
      DIV=2.0
      LI=L
      CALL SUMIT
      LG=LZ2
      CTOT=C(LG)
      CALL SUMIT
      GO TO 24
   22 CONTINUE
  221 CONTINUE
      DO 231 LZ=1,NZ
      LZ2=ZLINKS (LZ,IZ)
      IF (LZ2.LE.0) GO TO 231
      DO 23 J=1,3
      IF (LCON(LZ2,J).NE.LG.OR.LZ2.EQ.LG) GO TO 23
      DIV=2.0
      LI=LG
      LG=LZ2
      CTOT=C(LG)
      CALL SUMIT
      LG=LI
      GO TO 236
   23 CONTINUE
  231 CONTINUE
  236 LI=L
```

```
      DIV=1.0
      CTOT=C(LG)
      CALL SUMIT
      L=LG
      GO TO 21
C COME HERE IF ALL LINKS TO GATE TAKEN CARE OF
   24 CONTINUE
*     PRINT 71,IZ,ZVEH,ZVEHM
C NOW GO FROM GATE TO ALL DESTINATION NODES
      IF (IZ .GT. NEXT) GO TO 25
      IZST=NEXT1
      IZEND=NZONES
      GO TO 30
   25 IZST=1
      IZEND=NEXT
  30  IZ1=IZ
C
C  LET IZ BE IZ1 THE DESTINATION ZONE THEN ALL TRIPS FROM THE GATES
C  TO IZ1 CAN BE CALCULATED
C
      CT1= 1.0E10
C
C           CHECK FOR TRUCK ROUTE AND APPLY VEHICLES OF SPECIFIED TYPE TO
C     THIS ROUTE.
C
      Z=IZ1
C CALCULATE NO. OF VEHICLE TRIPS TO ZONE FROM GATE (ZTRIP1)
      ZTRIP1=VD(IZ1,IG)
      IF(ZTRIP1.LE.0.) GO TO 39
      SVTP=0.
C  CALCULATE THE NUMBER OF CIVILIAN OR MILITARY VEHICLES
      SVTPM=0.
      DO 300 I=1,6
      SVTP=SVTP+VEHTYP(I,IZ1)
      SVTPM=SVTPM+VTYPM(I,IZ1)
 300  CONTINUE
      DO 301 I=1,6
      ZVEH1(I)=0.0
      ZVEHM1(I)=0.0
      IF(SVTP.GT.0.0) ZVEH1(I)=ZTRIP1*(1.-FRAMIL(IZ1,2))*VEHTYP(I,IZ1)/
     1SVTP
      IF(SVTPM.GT.0.0) ZVEHM1(I)=FRAMIL(IZ1,2)*ZTRIP1*VTYPM(I,IZ1)/SVTPM
 301  CONTINUE
C  ADD BUSES
      IF (ZATTR(IZ1).GT.0.)
     1ZVEHM1(5)=ZVEHM1(5)+VTYPM(7,IZ1)*ZTRIP1/ZATTR(IZ1)
      I1=1
      I2=6
C  CHECK FOR TRUCK ROUTE
      IF (IGT.NE.IG) GO TO 304
      IF (ITDZ(Z).EQ.0) GO TO 304
      I1=ITYP1
      I2=ITYP2
      I3=ITDZ(Z)
      LG=ITR(I3)
```

AD-A079 555 SRI INTERNATIONAL MENLO PARK CA F/G 15/5
USER GUIDE FOR THE AIR FORCE BASE AUTOMOTIVE TRANSPORTATION SIM--ETC(U)
SEP 79 R SANDYS F08635-76-D-0132
UNCLASSIFIED AFESC/ESL-TR-79-16-VOL-2 NL

3 OF 4
AD A
079555




1.0
4.5
5.0
5.6
6.3
7.1
8.0
2.8
3.2
3.6
4.0
2.5
2.2
2.0
1.1
1.8
1.25
1.4
1.6

```
           DO 302 I=1,6
      302  COUNT(4,LG)=COUNT(4,LG)+(ZVEH1(I)+ZVEHM1(I))/2.
           I4=MOD(I3-1,24)
           DO 303 I5=1,I4
           L=LG
           LG=ITR(I3-I5)
           CTOT=505.+CG(IG,LG)
           LI=L
           DIV=1.0
      303  CALL SUMIT
      304  CONTINUE
           LG1=0
           L1=0
           NZL=NZLINKS(IZ1)
           L=0
           CT=1.0E10
           CT1=1.0E10
     C FIND LINK WITH MINIMUM COST
           DO 31 J=1,NZL
           LTEMP=ZLINKS(J,IZ1)
           IF(LTEMP.LE.0) GO TO 31
           IF (CG(IG,LTEMP).GE.CT) GO TO 305
           L1 = L
           L=LTEMP
           CT1 = CT
           CT=CG(IG,L)
           GO TO 31
      305  IF (CG(IG,LTEMP).GE.CT1) GO TO 31
           L1 = LTEMP
           CT1=CG(IG,LTEMP)
        31 CONTINUE
     ***ELIMINATE ALTERNATE ROUTE***
           IF(IOPT(5).GT.0) CT1=1.E10
     C  MAKE A CHECK FOR REASONABLE ALTERNATE ROUTE ...?
           IF (CT+180.0.LT.CT1) CT1=1.0E10
     C FIND NO OF VEHICLES BY TYPE (ZVEH1)
           DO 34 I=1,6
     C INCREMENT COUNT OF THOSE STOPPING
           COUNT(4,L)=COUNT(4,L)+(ZVEH1(I)+ZVEHM1(I))*CT1/(CT1+CT)
           IF(CT1.LT.1.E10) COUNT(4,L1)=COUNT(4,L1)+(ZVEH1(I)+ZVEHM1(I))
          1*CT/(CT1+CT)
           IF(CT1.GE.1.E10) COUNT(4,L)=COUNT(4,L)+(ZVEH1(I)+ZVEHM1(I))
          1*CT/(CT1+CT)
        34 CONTINUE
     C BACK UP ONE LINK AND APPLY COUNTS.
     C
       35  IF (L.EQ.0) GO TO 37
           LG=RG(IG,L)
           IF (LG.LE.0) GO TO 37
           CTOT=CG(IG,LG)+505.
           IF (CT1.LT.1.E10) GO TO 36
           DIV=1.0
           LI =L
           CALL SUMIT
           GO TO 38
```

```
   36   IF (LG.LE.0) GO TO 37
        L1=L
        DIV=(CT1+CT)/CT1
        CALL SUMIT
   37   IF (L1.EQ.0) GO TO 38
        LG1=RG(IG,L1)
        IF (LG1.LE.0) GO TO 38
        CTOT=CG(IG,LG1)+505.
        L1=L1
        L=LG
        DIV=(CT1+CT)/CT
        LG=LG1
        CALL SUMIT
        LG=L
   38   L=LG
        L1=LG1
        IF (LG.GT.0.OR.LG1.GT.0) GO TO 35
C END OF DESTINATIONS NODES FOR A GATE LOOP
*       PRINT 71,Z,ZVEH1,ZVEHM1
    39  CONTINUE
  939   FORMAT(6H TIME=,F8.3,4X,6HT2-T1= F8.3)
*       RT1=RT2
        SZTRIP1=SZTRIP1+ZTRIP1
        NZTRIP=NZTRIP +1
   71   FORMAT (1H ,I3,2X,21F6.3)
C END OF GATES LOOP
*       IF (IZ.EQ.1.OR.IZ.EQ.NEXT1)
*      1PRINT 960,(I,(COUNT(J,I),J=1,18),I=1,NLINK)
   60   CONTINUE
C NOW DO CALCULATIONS FOR TRIPS BETWEEN NODES ON SAME SIDE OF THE GATE
C COUNTS ARE NOT DONE FOR EXTERNAL NODES
        IF (IZ .LE. NEXT) GO TO 70
C LOOP THRU ALL NODES IN INTERIOR
        I1=1
         I2=6
        TOTVD=0.0
        TOTOV=0.0
        TOTBUS=0.
        DO 605 K=1,NTRIP
  605    SNTD(K)=0.0
        DO 61 I=NEXT1,NZONES
        TOTVD=TOTVD+VD(I,NGATE1)
        TOTOV=TOTOV+OV(I,NGATE1)
        TOTBUS=TOTBUS+VTYPM(7,I)
        DO 609 K=1,NTRIP
  609    SNTD(K)=NTD(I,K)+SNTD(K)
   61   CONTINUE
C  THE NUMBER OF INTERIOR TRIPS ORIGINATING AT ZONE IZ WIL BE APPLIED TO
C  THE NETWORK.
        SNTO = 0.0
        DO 612 K=1,NTRIP
  612   SNTO = SNTO+NTO(IZ,K)
        IF(SNTO.LE.0.0) GO TO 70
         ODM = 0.0
```

```
      GD=0.0
      DO 69 IZ1=NEXT1,NZONES
      IF (IZ1 .EQ. IZ) GO TO 69
      DO 613 K=1,NTRIP
      IF(SNTD(K).EQ.0.0 .OR.TOTOV.EQ.0.0) GO TO 613
      GDT=NTG(IZ,K)*NTD(IZ1,K)/SNTD(K)*(TOTVD+TOTOV)/(2.*TOTOV)
      IF(K.GT.NTRIPC) GDM=GDM+GDT
      GD = GD + GDT
  613 CONTINUE
      IF(GD.LT.0.1*IOPT(5)) GO TO 69
      NZL=NZLINKS(IZ1)
      CT=1.0E10
      L1=0
      L=0
      CT1 = 1.E10
      DO 62 J=1,NZL
      LTEMP=ZLINKS(J,IZ1)
      IF (LTEMP.LE.0) GO TO 62
      IF (C(LTEMP) .GT. CT) GO TO 615
      L1 = L
      L=LTEMP
      CT1 = CT
      CT=C(LTEMP)
      GO TO 62
  615 IF(C(LTEMP).GT.CT1) GO TO 62
      L1 = LTEMP
      CT1 = C(LTEMP)
   62 CONTINUE
   63 CONTINUE
***ELIMINATE COMPUTING SECOND ROUTE***
      IF(IOPT(5).GT.0) CT1 = 1.0E10
      SVTP=0.
      SVTPM=0.
      DO 64 I=1,6
      SVTP=SVTP+VEHTYP(I,IZ1)
      SVTPM = VTYPM(I,IZ1) +SVTPM
   64 CONTINUE
      DO 65 I=1,6
      ZVEH2(I)=0.0
      ZVEHM2(I)=0.0
      IF(SVTP.NE.0.0)
     1ZVEH2(I)=(GD-GDM)*VEHTYP(I,IZ1)/SVTP
      IF(SVTPM.NE.0.0)
     1ZVEHM2(I)=GDM*VTYPM(I,IZ1)/SVTPM
      COUNT(4,L)=COUNT(4,L)+(ZVEH2(I)+ZVEHM2(I))*CT1/(CT1+CT)
      IF(CT1.LT.1.E10) COUNT(4,L1)=COUNT(4,L1)+(ZVEH2(I)+ZVEHM2(I))
     1*CT/(CT1+CT)
      IF(CT1.GE.1.E10) COUNT(4,L)=COUNT(4,L)+(ZVEH2(I)+ZVEHM2(I))
     1*CT/(CT1+CT)
   65 CONTINUE
C  NOW, ADD IN BUSES.
      IF (TOTBUS.LE.0.) GO TO 655
      COUNT(4,L)=COUNT(4,L)+(VTYPM(7,IZ)*VTYPM(7,IZ1))/TOTBUS
      ZVEHM2(5)=ZVEHM2(5)+VTYPM(7,IZ)*VTYPM(7,IZ1)/TOTBUS
  655 LG1=0
```

```
   66 CONTINUE
      IF (L.EQ.0) GO TO 67
      LG=R(L)
      IF (LG .LE. 0) GO TO 67
      CTOT=C(LG)
      DIV=1.0
      LI=L
      IF (CT1.LT.1.E10) GO TO 661
      CALL SUMIT
      GO TO 68
  661 DIV=(CT1+CT)/CT1
      CALL SUMIT
   67 IF (L1.EQ.0) GO TO 68
      LG1=R(L1)
      IF (LG1.LE.0) GO TO 68
      L=LG
      LI=L1
      LG=LG1
      DIV=(CT1+CT)/CT
      CTOT=C(LG)
      CALL SUMIT
      LG=L
   68 L=LG
      L1=LG1
      IF (LG.GT.0.OR.LG1.GT.0) GO TO 66
      NOD=NOD+1
      SOD=SOD+OD
C          END OF LOOP THROUGH THE INTERIOR ZONES.
*     PRINT 71,IZ1,ZVEH2,ZVEHM2
      ODM = 0.0
      OD=0.0
   69 CONTINUE
      CALL SECOND(RT2)
      RT3=RT2-RT1
*     PRINT 939,RT2,RT3
      RT1=RT2
      NOD=NOD+NZTRIP
      IF(IPFLG(3).GE.4) PRINT 969, ZNAME(IZ),SZTRIP,SZTRIP1,SOD,RT3,RT2
     1,NOD
  969  FORMAT(2XA2,F14.3,2F17.3,F13.3,F12.3,I10)
   70 CONTINUE
      IF(IPFLG(3).EQ.0) GO TO 80
      PRINT 9999, (BAT(I),I=1,3),NYR,NMO,NDAY,(LHEAD(I),I=1,5),
     1TODS,TODE
 9999 FORMAT(1H1,2A10,A3,7X,I2,1H/,I2,1H/,I2,5X,5A10,
     16X,12HPERIOD FROM F5.0,3H TOF6.0,6H HOURS)
      PRINT 970
      PRINT 972
      TSUM = 0.0
      DO 78 I=1,NLINK
      IF(MOD(I,50).NE.0) GO TO 75
      PRINT 9999, (BAT(II),II=1,3),NYR,NMO,NDAY,(LHEAD(II),II=1,5)
     1,TODS,TODE
      PRINT 970
      PRINT 971
```

```
SUBROUTINE  ASSIGN   TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE     9

                PRINT 972
          75    SUM = 0.0
                DO 76 J=1,4
                SUM = COUNT(J,I) + SUM
          76    CONTINUE
                TSUM = TSUM + SUM
                PRINT 973, I, SUM, (COUNT(J,I),J=1,18)
                DO 77 J=1,18
                SCT(J) = COUNT(J,I) + SCT(J)
          77    CONTINUE
                IF(I.EQ.NLINK) GO TO 79
          78    CONTINUE
          79    PRINT 974, TSUM, (SCT(I),I=1,18)
         970    FORMAT(46H G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS)
         971    FORMAT(1H+,45X,12H (CONTINUED))
         972    FORMAT(49H LINK  SUM    THRU     RT  LEFT  TERM    LDV  LDT1
               160HLDT2    HDT    HDD    MOT  LDVM LDT1M LDT2M  HDTM  HDDM  MOTM
               211HCOLDS  HOTS )
         973    FORMAT(1X,I4,19F6.0)
         974    FORMAT(1H ,4X,19(6H------)/
               15X,4F6.0,15F6.0)
          80    RETURN
                END
```

```
SUBROUTINE ASSIGN    TRACE                        CDC 6700 FTN V3.0-358F OPT=0  79/08/17. 15.49.02.      PAGE     10

     SYMBOLIC REFERENCE MAP

ENTRY POINTS
     1  ASSIGN

VARIABLES      SN  TYPE             RELOCATION
     2  BAT         REAL       ARRAY    CHD            360  C          REAL       ARRAY    / /
  5500  CO          REAL       ARRAY    / /            361  COEFD      REAL       ARRAY    TRIP
   171  COEFO       REAL       ARRAY    TRIP             0  COUNT      REAL       ARRAY    VOLUME
  2465  CT          REAL                             17333  CTOT       REAL                / /
  2460  CT1         REAL                              1320  DELA       REAL       ARRAY    RESLT
  2641  DIST        REAL       ARRAY    LINK         17314  DIV        REAL                / /
     6  DOW         REAL                COMM          2122  FCS        REAL       ARRAY    ZONES
     1  FCSP        REAL       ARRAY    TRIP            50  FEXATT     REAL       ARRAY    COMM
    44  FEXGEN      REAL       ARRAY    COMM            60  FINATT     REAL       ARRAY    COMM
    54  FINGEN      REAL       ARRAY    COMM          2742  FRAMIL     REAL       ARRAY    ZONES
   171  GCNT15      REAL       ARRAY    GATE           145  GCOUNT     REAL       ARRAY    GATE
  5121  HEIGHT      REAL       ARRAY    LINK             0  I          INTEGER             COMM
    37  IFCSIZ      INTEGER    ARRAY    TRIP          2430  IG         INTEGER
     0  IGT         INTEGER             TROUT         2502  II         INTEGER
    31  IOPT        INTEGER    ARRAY    COMM          2442  IORE       INTEGER
    24  IPFLG       INTEGER    ARRAY    COMM            65  ITDZ       INTEGER    ARRAY    TROUT
    13  ITM         INTEGER             COMM             3  ITOZ       INTEGER    ARRAY    TROUT
   147  ITR         INTEGER    ARRAY    TROUT            1  ITYP1      INTEGER             TROUT
     2  ITYP2       INTEGER             TROUT         2432  IZ         INTEGER
  2456  IZEND       INTEGER                           2455  IZST       INTEGER
  2457  IZ1         INTEGER                          17312  I1         INTEGER             / /
 17313  I2          INTEGER             / /           2447  I3         INTEGER
  2450  I4          INTEGER                           2451  I5         INTEGER
     3  J           INTEGER             COMM             4  K          INTEGER             COMM
     2  L           INTEGER             COMM           552  LANDD      INTEGER    ARRAY    TRIP
   456  LANDO       INTEGER    ARRAY    TRIP          3107  LANDU      INTEGER    ARRAY    ZONES
  2261  LCAP        INTEGER    ARRAY    LINK          3601  LCON       INTEGER    ARRAY    LINK
 17311  LG          INTEGER             / /              1  LGATE      INTEGER    ARRAY    GATE
  2444  LGS         INTEGER                           2462  LG1        INTEGER
    15  LHEAD       INTEGER    ARRAY    COMM         17310  LI         INTEGER             / /
  2466  LTEMP       INTEGER                           2453  LZ         INTEGER
  2454  LZ2         INTEGER                           2463  L1         INTEGER
    40  NCLB        INTEGER             COMM             7  NDAY       INTEGER             CHD
    42  NDEMVC      INTEGER             COMM          1357  NEXT       INTEGER             ZONES
  3106  NEXT1       INTEGER             ZONES            0  NGATE      INTEGER             GATE
   311  NGATE1      INTEGER             GATE             1  NLANE      INTEGER    ARRAY    LINK
     0  NLINK       INTEGER             LINK             6  NMO        INTEGER             CHD
    43  NNAME       INTEGER             COMM          2436  NOD        INTEGER
    37  NPLT        INTEGER             COMM            41  NPLU       INTEGER             COMM
  5501  NSTOPS      INTEGER    ARRAY    LINK         13616  NTD        INTEGER    ARRAY    / /
 12240  NTO         INTEGER    ARRAY    / /              0  NTRIP      INTEGER             TRIP
   455  NTRIPC      INTEGER             TRIP           266  NVARD      INTEGER    ARRAY    TRIP
    75  NVARO       INTEGER    ARRAY    TRIP            14  NYEAR      INTEGER             COMM
     5  NYR         INTEGER             CHD           2452  NZ         INTEGER
  2464  NZL         INTEGER                              1  NZLINKS    INTEGER    ARRAY    ZONES
     0  NZONES      INTEGER             ZONES         2467  NZTRIP     INTEGER
  2435  NZTRIP1     INTEGER                           2475  GD         REAL
  2474  GDM         REAL                              2476  GDT        REAL
```

```
VARIABLES      SN  TYPE              RELOCATION
15174  OV          REAL       ARRAY    / /           311  PD        REAL                 PARKZ
   63  PLA         REAL       ARRAY    PARKZ         313  PLBO      REAL                 PARKZ
  376  PLL         REAL       ARRAY    PARKZ         312  PLS       REAL                 PARKZ
  646  PLUALU      REAL       ARRAY    TRIP          314  PNOS      INTEGER    ARRAY     PARKZ
 2640  PRT         REAL       ARRAY    RESLT        2440  PTT       REAL
 2441  PTTA        REAL                               56  PURP      REAL       ARRAY     TRIP
    1  PV          REAL       ARRAY    PARKZ           0  PZ        INTEGER              PARKZ
 2722  QUEUE       REAL       ARRAY    RESLT           0  R         INTEGER    ARRAY     / /
  740  RG          INTEGER    ARRAY    / /          2431  RT1       REAL
 2477  RT2         REAL                             2500  RT3       REAL
 2523  SCT         REAL       ARRAY                 2504  SNTD      REAL       ARRAY
 2473  SNTO        REAL                             2437  SOD       REAL
 2503  SUM         REAL                             2445  SVTP      REAL
 2446  SVTPM       REAL                             2433  SZTRIP    REAL
 2434  SZTRIP1     REAL                                5  TOD       REAL                 COMM
    0  TODE        REAL                CHD             1  TODS      REAL                 CHD
   10  TOTATT      REAL                COMM         2472  TOTBUS    REAL
   12  TOTGEN      REAL                COMM         2471  TOTOV     REAL
 2470  TOTVD       REAL                                7  TP        REAL                 COMM
   64  TP15        REAL                COMM         2501  TSUM      REAL
    0  TT          REAL       ARRAY    RESLT          11  TTPZ      REAL                 COMM
   25  VCR         REAL       ARRAY    GATE        16242  VD        REAL       ARRAY     / /
 1364  VEHTYP      REAL       ARRAY    ZONES        3221  VEL       REAL       ARRAY     LINK
 2204  VTYPM       REAL       ARRAY    ZONES         145  VZ        REAL       ARRAY     PARKZ
   27  XP          INTEGER             COMM          361  X1        REAL       ARRAY     LINK
 1321  X2          REAL       ARRAY    LINK           30  YP        INTEGER              COMM
  741  Y1          REAL       ARRAY    LINK         1701  Y2        REAL       ARRAY     LINK
    1  Z           INTEGER             COMM         1360  ZAT       REAL       ARRAY     ZONES
 1213  ZATTR       REAL       ARRAY    ZONES        1275  ZGENR     REAL       ARRAY     ZONES
 1362  ZGT         REAL       ARRAY    ZONES          63  ZLINKS    INTEGER    ARRAY     ZONES
 2040  ZNAME       INTEGER    ARRAY    ZONES        2443  ZTRIP     REAL
 2461  ZTRIP1      REAL                              227  ZV        REAL       ARRAY     PARKZ
17315  ZVEH        REAL       ARRAY    / /         17324  ZVEHM     REAL       ARRAY     / /
17324  ZVEHM1      REAL       ARRAY    / /         17324  ZVEHM2    REAL       ARRAY     / /
17315  ZVEH1       REAL       ARRAY    / /         17315  ZVEH2     REAL       ARRAY     / /

FILE NAMES         MODE
        OUTPUT     FMT

EXTERNALS          TYPE   ARGS
        MNPATH             4                          MOD       INTEGER    2
        SECOND             1                          SUMIT                0

STATEMENT LABELS
    0  10                          0  11                                157  14
  173  15                          0  19                                  0  20
  401  21                        461  22                                527  23
  550  24                        557  25                                562  30
 1060  31                          0  34                               1157  35
 1212  36                       1224  37                               1262  38
 1272  39                          0  60                                  0  61
 1525  62                          0  63          INACTIVE                0  64
    0  65                       1725  66                               1760  67
 2011  68                       2027  69                               2067  70
```

```
STATEMENT LABELS
  2331  71       FMT  NO REFS           2164  75                             0  76
     0  77                                 0  78                          2236  79
  2245  80                              2273  91     FMT                     0  201
   464  221                              532  231                          535  236
     0  300                                0  301                            0  302
     0  303                              775  304                         1042  305
     0  605                                0  609                            0  612
  1445  613                             1514  615                         1724  655
  1753  661                             2325  939    FMT  NO REFS         2334  969    FMT
  2352  970      FMT                    2361  971    FMT                  2365  972    FMT
  2404  973      FMT                    2407  974    FMT                  2341  9999   FMT

COMMON BLOCKS   LENGTH
        COMM        53
        LINK      3121
        ZONES     1657
        TRIP       530
        GATE       202
        VOLUME    4320
        TROUT      199
        PARKZ      304
        / /       7900
        RESLT     1730
        CHD          8

STATISTICS
  PROGRAM LENGTH    2545B     1381
   COMMON LENGTH   27534B    12124
    BLANK COMMON   17334B     7900
```

```
      SUBROUTINE AQAMF
*
*  THIS SUBROUTINE WRITES A FILE OF DATA TO BE INPUT TO THE
*   AQAM MODEL.  DATA ON THE FILE IS FROM DATA SETS 28 - 32.
*
*  COMMON BLOCKS
      COMMON /COMM/ I,Z,L,J,K,TOD,DOW,TP,TOTATT,TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,OPT(6),NPLT,NCLB,NPLU,NDEMVC
     2,NNAME,FEXGEN(4),FEXATT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON / LINK/ NLINK,NLANE(240), X1(240), Y1(240), X2(240),
     $  Y2(240), LCAP(240), DIST(240), VEL(240), LCON(240,3),
     $  HEIGHT(240), NSTOPS(240)
      COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
     $  ZGENR(50), NEXT, ZAT(2),ZGT(2), VEHTYP(6,50), ZNAME(50),
     $  FCS(50), VTYPM(7,50), FRAMIL(50,2), NEXT1,LANDU(50)
      INTEGER ZLINKS,ZNAME
      COMMON /VOLUME/ COUNT(18,240)
      COMMON /PARKZ/ PZ, PV(50), PLA(50), VZ(50), ZV(50), PD, PLS,
     $  PLBO, PNOS(50), PLL(50)
      INTEGER PNOS,PZ
      COMMON /RESLT/ TT(240,3), DELA(240,3), PRT(50), QUEUE(240)
      COMMON NUMVA, NVEF, NZID(50), AVSPD(240), VMILEM(6), VMILEC(6),
     $  FHS(50), NHSOAK, LSID(240), VONLK(240), PCCO(240),
     $  PCHO(240), NCOLDM(6), NCOLDC(6)
      DIMENSION SPRT(50),SVZ(50),SZV(50),SFRAMI(50,2),SFCS(50),SFHS(50)
     1, SCOUNT(18,240)
*
      REAL VHMLMO(13), VHMLDY(2), VHMLHR(24), CVABMO(13),CVABDY(2),
     $  CVABHR(24),FOTMET
*
      NAMELIST /CONVER/ VHMLMO, VHMLDY, VHMLHR, CVABMO, CVABDY, CVABHR
*
      DATA VHMLMO/12 * .08333, 1.0/, VHMLDY/2 * .1429/, VHMLHR/.0833,
     $  22 * .08333, .0833/, CVABMO/12 * .08333, 1.0/,
     $  CVABDY/2 * .1429/, CVABHR/.0833, 22 * .08333, .0833/
      DATA FOTMET/.304785/
*
*  READ CONVERSION VARIABLES FROM NAMELIST IF ANY ARE BEING
      ENTRY AQAMI
      IF(NNAME.EQ.0) GO TO 70
      READ(5,CONVER)
*
*  WRITE OUT VALUES OF CONVERSION FACTOR VARIABLES TO FILE SO THEY
*  CAN BE VERIFIED BY AQAM.
 50   WRITE(6,1090) VHMLMO
 1090 FORMAT(13F6.4)
      WRITE(6,1091) VHMLDY
 1091 FORMAT(2F6.4)
      WRITE(6,1092) (VHMLHR(I),I=1,12)
 1092 FORMAT(12F6.4)
      WRITE(6,1092) (VHMLHR(I),I=13,24)
      WRITE(6,1090) CVABMO
      WRITE(6,1091) CVABDY
      WRITE(6,1092) (CVABHR(I),I=1,12)
```

```
      WRITE(6,1092) (CVABHR(I),I=13,24)
      GO TO 70
      ENTRY AQAMP
*
*  CALCULATE CONVERSION FACTORS FOR BOTH MILITARY AND CIVILIAN VARIABLES
      IDOW = 1
      IF (DOW .EQ. 1.0.OR. DOW .EQ.7.0) IDOW = 2
      ITOD = TOD/100.
      NY = NYEAR / 100
      MON = NY / 100
      MON = NY - (MON *100)
      MCONVF = (((3600./TPER) / VHMLHR(ITOD)) / VHMLDY(IDOW)) * 4.29
     $ / VHMLMO(MON) / 1000.
C CCONVF CONVERTS FROM VEH-MILES TO THOUSANDS VEH-MI PER YEAR
      CCONVF = (((3600./TPER) / CVABHR(ITOD)) / CVABDY(IDOW)) * 4.29
     $ / CVABMO(MON) / 1000.
C
C  DATA SET 20
C
C  CARD NUMBER 1
      NUMVA = NZONES-NEXT
      WRITE (7,1001) NUMVA
      IF(NUMVA.EQ.0) GO TO 100
C
C  CARD NUMBER 2
      DO 11 IZ=NEXT1,NZONES
      NP = PNOS(IZ)
      XCENT=0.
      YCENT=0.
      DO 10 N=1,NP
      L1= IABS(ZLINKS(N,IZ))
      XCENT=XCENT+X1(L1)+X2(L1)
      YCENT=YCENT+Y1(L1)+Y2(L1)
   10 CONTINUE
      XCENT=XCENT/(2.*NP)
      YCENT=YCENT/(2.*NP)
      HT=0
      PL=PLL(IZ)/2
      IZID=IZ-NEXT+3300
       WRITE(7,1011) IZID,XCENT,YCENT,HT,PL
   11 CONTINUE
 1011  FORMAT(I4,4X-3P,2F8.2,0P,2F8.2)
  100 CONTINUE
*
*  DATA SET 28 - MILITARY MOTOR VEHICLE AREA SOURCES
*
*  CARD NUMBER 1
      WRITE(7,1001) NUMVA
 1001 FORMAT(I4,68X)
      IF (NUMVA .EQ. 0) GO TO 200
*
*  CARD NUMBER 2
      NVEF = 3
      DO 190 IZ = NEXT1, NZONES
      NZID(IZ) = 3300 + IZ - NEXT
```

```
      AVSPD(IZ)=15.
      IF(SPRT(IZ).NE.0.0) AVSPD(IZ)=(PLL(IZ)*(SVZ(IZ)+SZV(IZ))
     1 /SPRT(IZ))* .68/FOTMET
      DO 110 I = 1, 6
  110 VMILEM(I) = VTYPM(I,IZ) * PLL(IZ)/5280. * MCONVF
     1 *(SZV(IZ)*SFRAMI(IZ,1)+SVZ(IZ)*SFRAMI(IZ,2))/100.
      WRITE(7,1002) NZID(IZ), NVEF, AVSPD(IZ), (VMILEM(I), I = 1,6)
 1002 FORMAT(2I4, 7F8.2)
*
*  IF VEHICLE EMISSION FACTOR IS NOT 3, SKIP CARDS 3 AND 4
      IF (NVEF .NE. 3) GO TO 190
*
*  CARD NUMBER 3
      SFHS(IZ) = 1. - SFCS(IZ)
      WRITE(7,1003) NZID(IZ), SFCS(IZ), SFHS(IZ)
 1003 FORMAT(I4, 24X, 2F4.0)
*
*  CARD NUMBER 4
      NHSOAK = SFRAMI(IZ,2) * SVZ(IZ) * MCONVF + .5
      WRITE(7,1004) NZID(IZ), NHSOAK
 1004 FORMAT(2I4)
*
  190 CONTINUE
*
*DATA SET 29 - CIVILIAN MOTOR VEHICLE AREA SOURCES
*
*  CARD NUMBER 1
  200 WRITE(7,1001) NUMVA
      IF (NUMVA .EQ. 0) GO TO 300
      DO 290 IZ = NEXT1, NZONES
*
*  CARD NUMBER 2
      DO 210 I = 1, 6
  210 VMILEC(I) = VEHTYP(I,IZ) * PLL(IZ)/5280. * CCONVF
     1 *(SZV(IZ)*(1.0-SFRAMI(IZ,1))+SVZ(IZ)*(1.0-SFRAMI(IZ,2)))
     2/100.
      WRITE(7,1002) NZID(IZ), NVEF, AVSPD(IZ), (VMILEC(I), I = 1,6)
*
*  IF THE VEHICLE EMISSION FACTOR IS NOT 3, SKIP CARDS 3 AND 4
      IF (NVEF .NE. 3) GO TO 290
*
*  CARD NUMBER 3
      WRITE(7,1003) NZID(IZ), SFCS(IZ), SFHS(IZ)
*
*  CARD NUMBER 4
      NHSOAK = (1. - SFRAMI(IZ,2)) * SVZ(IZ) * CCONVF + .5
      WRITE(7,1004) NZID(IZ), NHSOAK
*
  290 CONTINUE
*
*  DATA SET 30 - AIRBASE LINE SOURCE GEOMETRIES
*
*  CARD NUMBER 1
  300 NL = NLINK/2
      DO 320 L=1,NLINK,2
```

```
      C   SET ID EQ FOR A PAIR OF LINKS
          LSID(L)=4001+L
          LSID(L+1)=4001+L
      C   TEST FOR UNMATCHED END POINTS
          IF(X1(L).EQ.X2(L+1).AND.X2(L).EQ.X1(L+1).AND.
         1 Y1(L).EQ.Y2(L+1) .AND. Y2(L).EQ.Y1(L+1)) GO TO 320
          LSID(L)=4000+L
          NL = NL+1
  320     CONTINUE
          WRITE(7,1001) NL
      *
      *  IF NO LINE SOURCES, SKIP DATA SETS 31 AND 32
          IF (NL .EQ. 0) GO TO 999
      *
          DO 390 L = 1, NLINK, 2
      *
      *  CARD NUMBER 2
          L1=L
          WIDTH = 0.
          DO 350 I=1,2
          WIDTH=NLANE(L1)*4 + WIDTH
          IF(LSID(L1).EQ.LSID(L1+1)) GO TO 350
      C   WRITE EVERY TIME THE LINKS ARE NOT A PAIR
          WRITE(7,1022) LSID(L1), X1(L1), Y1(L1), HEIGHT(L1), WIDTH, X2(L1),
         $  Y2(L1), HEIGHT(L1)
 1022     FORMAT(I4, 4X,-3P,2F8.2,0P2F8.2,8X, -3P2F8.2,0PF8.2)
          WIDTH = 0.0
  350     L1=L1+1
      *
  390     CONTINUE
      *
      *  DATA SET 31 - MILITARY MOTOR VEHICLE LINE SOURCES
      *
      *  CARD NUMBER 1
          WRITE(7,1001) NL
      *
      *  IF NL = 0, SKIP TO NEXT DATA SET
          IF (NL .EQ. 0) GO TO 500
      *
      *  CARD NUMBER 2
          DO 490 L = 1,NLINK,2
          L1=L
          IF(LSID(L1).NE.LSID(L1+1)) GO TO 450
          L1=L+1
          VONLK(L) = 0.
          DO 405 I = 1, 3
  405     VONLK(L) = VONLK(L) + SCOUNT(I,L) + SCOUNT(I,L+1)
          AVGTT=SCOUNT(4,L)*(SCOUNT(1,L)+SCOUNT(2,L)+SCOUNT(3,L))
         1 +SCOUNT(4,L+1)*(SCOUNT(1,L+1)+SCOUNT(2,L+1)+SCOUNT(3,L+1))
          AVSPD(L1)=(VEL(L)+VEL(L+1))/2.0
          IF(AVGTT.NE.0.0) AVSPD(L1)=AVGTT/VONLK(L)
          DO 410 K = 1, 6
          VMILEM(K) = (SCOUNT(10+K,L) + SCOUNT(10+K,L+1)) * DIST(L)/ 5280.
         $  * MCONVF/FOTMET
  410     CONTINUE
```

```
      *
      *  CARD NUMBER 3
            PCCO(L1)=0.
            PCHO(L1)=0.
            IF(VONLK(L).LE.0.)GO TO 415
            PCCO(L1) = (SCOUNT(17,L) + SCOUNT(17,L+1)) / VONLK(L)
            PCHO(L1) = (SCOUNT(18,L) + SCOUNT(18,L+1)) / VONLK(L)
      415    CONTINUE
            DO 420 K = 1, 6
            NCOLDM(K) = (SCOUNT(10+K,L) + SCOUNT(10+K,L+1)) * PCCO(L1)* MCONVF
          $  + .5
        420 CONTINUE
      1033 FORMAT(7I4,2P,2F4.0)
      *
            GO TO 480
      450    AVSPD(L1)=SCOUNT(4,L1)
            VONLK(L1)=SCOUNT(1,L1)+SCOUNT(2,L1)+SCOUNT(3,L1)
            DO 460  K=1,6
      460   VMILEM(K)=SCOUNT(10+K,L1)*DIST(L1)/5280.*MCONVF/FOTMET
            IF(VONLK(L1).LE.0.)GO TO 465
            PCCO(L1)=SCOUNT(17,L1)/VONLK(L1)
            PCHO(L1)=SCOUNT(18,L1)/VONLK(L1)
      465   CONTINUE
            DO 470 K=1,6
      470   NCOLDM(K)=SCOUNT(10+K,L1)*PCCO(L1)*MCONVF +.5
      480   CONTINUE
      *  CARD NUMBER 4
            WRITE(7,1002) LSID(L1), NVEF, AVSPD(L1), (VMILEM(K), K=1,6)
      *
      *  IF THE VEHICLE EMISSION FACTOR IS 3, SKIP CARDS 3 AND 4
            IF (NVEF .NE. 3) GO TO 490
            WRITE(7,1033) LSID(L1), (NCOLDM(K),K=1,6), PCCO(L1), PCHO(L1)
            NHOTS = 0
            WRITE(7,1004) LSID(L1), NHOTS
      486    L1=L1+1
            IF(L1.EQ.L+1) GO TO 450
        490 CONTINUE
      *
      *  DATA SET 32 - CIVILIAN MOTOR VEHICLE LINE SOURCES
      *
      *  CARD NUMBER 1
        500 WRITE(7,1001) NL
      *
      *  IF NL = 0, SKIP TO END
            IF (NL .EQ. 0) GO TO 999
      *
      *  CARD NUMBER 2
            DO 590 L = 1,NLINK,2
            L1=L
            IF(LSID(L1).NE.LSID(L1+1)) GO TO 550
            L1=L+1
            DO 505 K = 1, 6
            VMILEC(K) = (SCOUNT(4+K,L) + SCOUNT(4+K,L+1)) * DIST(L) / 5280.
          1 *CCONVF/FOTMET
        505 CONTINUE
```

```
      *
      *  CARD NUMBER 3
             DO 510 K = 1, 6
             NCOLDC(K) = (SCOUNT(4+K,L) + SCOUNT(4+K,L+1)) * PCCO(L1)* CCONVF
           $  + .5
        510 CONTINUE
      *
             GO TO 580
       550    DO 560 K=1,6
       560    VMILEC(K)=SCOUNT(4+K,L1)*DIST(L1)/5280.*CCONVF/FOTMET
              DO 570 K=1,6
       570    NCOLDC(K)=SCOUNT(10+K,L1)*PCCO(L1)*CCONVF+.5
       580    CONTINUE
             WRITE(7,1002) LSID(L1), NVEF, AVSPD(L1), (VMILEC(K), K=1,6)
      *
      *  IF VEHICLE EMISSION FACTOR IS NOT 3, SKIP CARDS 3 AND 4
             IF (NVEF .NE. 3) GO TO 590
             WRITE(7,1033) LSID(L1), (NCOLDC(K), K=1,6), PCCO(L1), PCHO(L1)
      *  CARD NUMBER 4
             NHOTS = 0
             WRITE(7,1004) LSID(L1), NHOTS
             L1=L1+1
             IF(L1.EQ.L+1) GO TO 550
        590 CONTINUE
             GO TO 70
      *
             ENTRY AQAMA
             DO 635 IZ=1,NZONES
             SPRT(IZ)=SPRT(IZ)+PRT(IZ)
             SVZ(IZ)=SVZ(IZ)+VZ(IZ)
             SZV(IZ)=SZV(IZ)+ZV(IZ)
             IF(SZV(IZ).LE.0.0) GO TO 632
             SFRAMI(IZ,1)=(SFRAMI(IZ,1)*SZV(IZ)+FRAMIL(IZ,1)*ZV(IZ))/(SZV(IZ)+
            1 ZV(IZ))
             SFCS(IZ)=(SFCS(IZ)*SZV(IZ)+FCS(IZ)*ZV(IZ))/(SZV(IZ)+ZV(IZ))
             FHS(IZ)=.5
             IF(ZV(IZ)+VZ(IZ).GT.0.)FHS(IZ)=(1.-FCS(IZ))*ZV(IZ)/(ZV(IZ)+VZ(IZ))
       63    SFHS(IZ)=(SFHS(IZ)*SZV(IZ)+FHS(IZ)*ZV(IZ))/(SZV(IZ)+ZV(IZ))
       632   IF(SVZ(IZ).GE.0.0) GO TO 635
             SFRAMI(IZ,2)=(SFRAMI(IZ,2)*SVZ(IZ)+FRAMIL(IZ,2)*VZ(IZ))/(SVZ(IZ)
            1+ VZ(IZ))
       635   CONTINUE
             DO 67 L=1,NLINK
             SCO = 0.0
             SCO=SCOUNT(1,L)+SCOUNT(2,L)+SCOUNT(3,L)
             DO 65 I=5,16
       65    SCOUNT(I,L)=SCOUNT(I,L)+COUNT(I,L)
             IF(SCO+COUNT(1,L)+COUNT(2,L)+COUNT(3,L).LE.0.0) GO TO 67
             SCOUNT(4,L)=(SCOUNT(4,L)*(SCOUNT(1,L)+SCOUNT(2,L)+SCOUNT(3,L))+
            1(COUNT(1,L)/TT(L,1)+COUNT(2,L)/TT(L,2)+COUNT(3,L)/TT(L,3)) *
            2DIST(L)/FOTMET*.68)/ (SCO+
            3 COUNT(1,L)+COUNT(2,L)+COUNT(3,L))
             DO 66 I=1,3
       66    SCOUNT(I,L)=SCOUNT(I,L)+COUNT(I,L)
       67    CONTINUE
```

```
SUBROUTINE  AQAMF     TRACE                    CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE       7

              TPER=TPER+TP
              RETURN
        C   INITIALIZE SAVE ARRAYS
         70   DO 73 IZ=1,NZONES
              SPRT(IZ)=SVZ(IZ)=SZV(IZ)=SFRAMI(IZ,1)=SFRAMI(IZ,2)=0.0
         73   SFCS(IZ)=SFHS(IZ)=0.0
              DO 77 L=1,NLINK
              DO 77 I=1,18
         77   SCOUNT(I,L)=0.0
              TPER=0.0
        999   RETURN
              END
```

```
SUBROUTINE  AQAMF     TRACE                         CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE     8

SYMBOLIC REFERENCE MAP

ENTRY POINTS
 1503  AQAMA           1  AQAMF           1  AQAMI          61  AQAMP

VARIABLES       SN  TYPE             RELOCATION
 2201  AVGTT        REAL                              64  AVSPD      REAL      ARRAY    / /
 2165  CCONVF       REAL                               0  COUNT      REAL      ARRAY    VOLUME
13366  CVABDY       REAL      ARRAY                13370  CVABHR     REAL      ARRAY
13351  CVABMO       REAL      ARRAY                 1320  DELA       REAL      ARRAY    RESLT
 2641  DIST         REAL      ARRAY    LINK            6  DOW        REAL               COMM
 2122  FCS          REAL      ARRAY    ZONES          50  FEXATT     REAL      ARRAY    COMM
   44  FEXGEN       REAL      ARRAY    COMM          460  FHS        REAL      ARRAY    / /
   60  FINATT       REAL      ARRAY    COMM           54  FINGEN     REAL      ARRAY    COMM
 2106  FOTMET       REAL                            2742  FRAMIL     REAL      ARRAY    ZONES
 5121  HEIGHT       REAL      ARRAY    LINK         2174  HT         REAL
    0  I            INTEGER            COMM         2157  IDOW       INTEGER
   24  IPFLG        INTEGER   ARRAY    COMM           13  ITM        INTEGER            COMM
 2160  ITOD         INTEGER                         2166  IZ         INTEGER
 2176  IZID         INTEGER                            3  J          INTEGER            COMM
    4  K            INTEGER            COMM            2  L          INTEGER            COMM
 3107  LANDU        INTEGER   ARRAY    ZONES        2261  LCAP       INTEGER   ARRAY    LINK
 3601  LCON         INTEGER   ARRAY    LINK           15  LHEAD      INTEGER   ARRAY    COMM
  543  LSID         INTEGER   ARRAY    / /          2173  L1         INTEGER
 2163  MCONVF       INTEGER                         2162  MON        INTEGER
 2172  N            INTEGER                           40  NCLB       INTEGER            COMM
 2451  NCOLDC       INTEGER   ARRAY    / /          2443  NCOLDM     INTEGER   ARRAY    / /
   42  NDEMVC       INTEGER            COMM         1357  NEXT       INTEGER            ZONES
 3106  NEXT1        INTEGER            ZONES        2202  NHOTS      INTEGER
  542  NHSOAK       INTEGER            / /          2177  NL         INTEGER
    1  NLANE        INTEGER   ARRAY    LINK            0  NLINK      INTEGER            LINK
   43  NNAME        INTEGER            COMM         2167  NP         INTEGER
   37  NPLT         INTEGER            COMM           41  NPLU       INTEGER            COMM
 5501  NSTOPS       INTEGER   ARRAY    LINK            0  NUMVA      INTEGER            / /
    1  NVEF         INTEGER            / /          2161  NY         INTEGER
   14  NYEAR        INTEGER            COMM            2  NZID       INTEGER   ARRAY    / /
    1  NZLINKS      INTEGER   ARRAY    ZONES           0  NZONES     INTEGER            ZONES
   31  OPT          REAL      ARRAY    COMM         1503  PCCO       REAL      ARRAY    / /
 2063  PCHG         REAL      ARRAY    / /           311  PD         REAL               PARKZ
 2175  PL           REAL                              63  PLA        REAL      ARRAY    PARKZ
  313  PLBG         REAL               PARKZ         376  PLL        REAL      ARRAY    PARKZ
  312  PLS          REAL               PARKZ         314  PNOS       INTEGER   ARRAY    PARKZ
 2640  PRT          REAL      ARRAY    RESLT           1  PV         REAL      ARRAY    PARKZ
    0  PZ           INTEGER            PARKZ        2722  QUEUE      REAL      ARRAY    RESLT
 2203  SCG          REAL                            2742  SCOUNT     REAL      ARRAY
 2576  SFCS         REAL      ARRAY                 2660  SFHS       REAL      ARRAY
 2432  SFRAMI       REAL      ARRAY                 2204  SPRT       REAL      ARRAY
 2266  SVZ          REAL      ARRAY                 2350  SZV        REAL      ARRAY
    5  TOD          REAL               COMM           10  TOTATT     REAL               COMM
   12  TOTGEN       REAL               COMM            7  TP         REAL               COMM
 2164  TPER         REAL                              64  TP15       REAL               COMM
    0  TT           REAL      ARRAY    RESLT          11  TTPZ       REAL               COMM
 1364  VEHTYP       REAL      ARRAY    ZONES        3221  VEL        REAL      ARRAY    LINK
13317  VHMLDY       REAL      ARRAY                13321  VHMLHR     REAL      ARRAY
```

```
      SUBROUTINE  AQAMF      TRACE                                   CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE      9

 VARIABLES       SN  TYPE              RELOCATION
 13302  VHMLMO       REAL        ARRAY                       452  VMILEC      REAL        ARRAY     / /
   444  VMILEM       REAL        ARRAY     / /              1123  VONLK       REAL        ARRAY     / /
  2204  VTYPM        REAL        ARRAY     ZONES             145  VZ          REAL        ARRAY     PARKZ
  2200  WIDTH        REAL                                   2170  XCENT       REAL
    27  XP           INTEGER               COMM              361  X1          REAL        ARRAY     LINK
  1321  X2           REAL        ARRAY     LINK             2171  YCENT       REAL
    30  YP           INTEGER               COMM              741  Y1          REAL        ARRAY     LINK
  1701  Y2           REAL        ARRAY     LINK                1  Z           INTEGER               COMM
  1360  ZAT          REAL        ARRAY     ZONES            1213  ZATTR       REAL        ARRAY     ZONES
  1275  ZGENR        REAL        ARRAY     ZONES            1362  ZGT         REAL        ARRAY     ZONES
    63  ZLINKS       INTEGER     ARRAY     ZONES            2040  ZNAME       INTEGER     ARRAY     ZONES
   227  ZV           REAL        ARRAY     PARKZ

 FILE NAMES          MODE
      TAPE5           FMT                  TAPE6      FMT                 TAPE7      FMT

 EXTERNALS           TYPE   ARGS
      IABS          INTEGER    1

 NAMELISTS
      CONVER

 STATEMENT LABELS
     0  10                                    0  11                                      0  50          INACTIVE
     0  63            INACTIVE                0  65                                      0  66
  2005  67                                 2013  70                                      0  73
     0  77                                  241  100                                     0  110
   412  190                                 415  200                                     0  210
   532  290                                 535  300                                   602  320
   670  350                                   0  390                                     0  405
     0  410                                1062  415                                     0  420
  1107  450                                   0  460                                  1170  465
     0  470                                1207  480                                     0  486          INACTIVE
  1264  490                                1267  500                                     0  505
     0  510                                1364  550                                     0  560
     0  570                                1421  580                                  1478  590
  1634  632                                1657  635                                  2053  999
  2121  1001     FMT                       2123  1002     FMT                         2126  1003    FMT
  2131  1004     FMT                       2115  1011     FMT                         2133  1022    FMT
  2141  1033     FMT                       2107  1090     FMT                         2111  1091    FMT
  2113  1092     FMT

 COMMON BLOCKS   LENGTH
      COMM           53
      LINK         3121
      ZONES        1657
      VOLUME       4320
      PARKZ         304
      RESLT        1730
      / /          1327

 STATISTICS
   PROGRAM LENGTH   13420B    5904
    COMMON LENGTH   25661B   11185
```

```
STATISTICS
    BLANK COMMON     2457B     1327
```

```
      SUBROUTINE PLOTI(IFLG)
C        INITIALIZE
C
      COMMON /PLOT/    XW,YW,SFAC,D1,H1,DH1,CH1,NLIN,LPLTF,XMX,YMX
      COMMON /LKARYS/ HRVOL(240),DYVOL(240),IOVRCAP(240),VOL(24),TOTVOL
      COMMON   IUSE(240)
      COMMON /TRUNCAT/ ITRKFG,S
      COMMON /EQUATES/ IDRAWN,NOTDRW,IPTDRW,IOFFSCL
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
     2,NDEMVC,NNAME,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
     +          ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
     +           ,ISIZ,CMETERS
      COMMON /VOLS/ VOLMAX,NLINES
      COMMON /MINMAX/ XMIN,XMAX,YMIN,YMAX
      DIMENSION BUF(1024)
C
C        VALUES IN IUSE ARRAY:
C           IDRAWN IF LINK IS COMPLETELY DRAWN
C           NOTDRW IF LINK IS NOT DWAWN AT ALL
C           IPTDRW IF LINK IS PARTLY DRAWN (AND PARTLY OFF SCALE)
C           IOFFSCL IF LINK IS COMPLETELY OFF SCALE
      DATA IDRAWN,NOTDRW,IPTDRW,IOFFSCL/2,0,1,-1/
C
C        IF DATA IS IN METERS INSTEAD OF FEET, THIS IS FT/M (3.28084);
C        IF DATA IS IN DECAMETERS, THIS IS 32.8084;
C           OTHERWISE, CMETERS IS SET TO 1.0.
      DATA CMETERS/3.28084/
C
C        DEFAULT SCALE IS 400 FT PER 1 INCH
      DATA SCALE/400.0/
C
C        DEFAULT EPSILON VALUES (LINE SPACING, LETTER SIZE, ETC)
      DATA EPSLON1,EPSLON2,EPSLON3,CHGHT/10.0,20.0,60.0,35.0/
C
C        PEN POSITION
      DATA PENX,PENY/0.0,0.0/
C
C        SOME FLAGS
C           ICAL = 0   IF CALCOMP
C                = 1   IF TECTRONIC
C           ISIZ IS REAL SIZE OF PLOT, IN INCHES (6 FOR TECTRONIC,29 FOR CALCOMP)
C           NLINES IS MAXIMUM NUMBER OF CAPACITY LINES
      DATA ICAL,ISIZ/0,29/,NLINES/6/
C
C
C
C        SET SCALE TO CONVERT CO-ORDINATES TO INCHES
      IF (SFAC .NE. 0) SCALE = SFAC
      SCALE = SCALE / CMETERS
C
C        SET UP SPACING VALUES
      IF (D1 .NE. 0) EPSLON1 = D1
```

```
      IF (H1 .NE. 0) EPSLON2 = H1
      IF (DH1 .NE. 0) EPSLON3 = DH1
      IF (CH1 .NE. 0) CHGHT = CH1
      EPSLON1 = EPSLON1 / CMETERS
      EPSLON2 = EPSLON2 / CMETERS
      EPSLON3 = EPSLON3 / CMETERS
      CHGHT = CHGHT / CMETERS
C
      IF (NLIN .NE. 0) NLINES = NLIN
C
C
C
C       CALCULATE MAXIMA AND MINIMA OF LINKS AND CAPACITIES
      CALL PRESCAN(XMIN,XMAX,YMIN,YMAX)
C
C       SET WINDOW, IF ANY
      IWINDF = 0
      IF (XW .EQ. 0 .AND. YW .EQ. 0) GO TO 1
        IWINDF = 1
        XMIN = XW
        YMIN = YW
1     CONTINUE
C
      IF (XMX .NE. 0) XMAX = XMX
      IF (YMX .NE. 0) YMAX = YMX
      IF (XMX .NE. 0. .OR. YMX .NE. 0.) IWINDF = 0
      PRINT 999,XMIN,XMAX,YMIN,YMAX
999   FORMAT (5F13.4)
C
      DO 15 I=1,240
15      IUSE(I) = 0
C
C       SET PLOT SIZE
      BUF(1) = ISIZ
      CALL PLOTS(BUF,1024,27)
C
      CALL PLOT(0.,-29.,-3)
      CALL PLOT(0.,.25,-3)
C       PLOT HEADINGS
      IF (ICAL .NE. 0) GO TO 2
C     HEADINGS ON CALCOMP
      CALL PLOT (0.0,0.0,-3)
      CALL SYMBOL (.1,25.0,.63,LHEAD,0.0,20)
      CALL NUMBER (2.0,20.0,.63,FLOAT(NYEAR),0.0,-1)
      CALL SYMBOL (.1,15.0,.63,LHEAD(3),0.0,20)
      CALL SYMBOL (.1,10.,.63,5HSCALE,0.0,5)
      CALL NUMBER (4.0,10.,.63,SCALE*CMETERS,0.0,-1)
      CALL SYMBOL (7.2,10.,.63,5HFT/IN,0.0,5)
      CALL PLOT (15.0,0.0,-3)
      IF (IFLG .NE. 1) GO TO 3
        CALL SYMBOL (.1,15.,.63,9HLINK PLOT,0.0,9)
      GO TO 3
C
C     HEADINGS ON TEKTRONIX
2     CONTINUE
```

```
SUBROUTINE PLOT1        TRACE                    CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE     3

                CALL PLOT (0.0,0.0,-3)
                CALL SYMBOL (.1,5.0,.30,LHEAD,0.0,20)
                CALL NUMBER (2.0,4.0,.35,FLOAT(NYEAR),0.0,-1)
                CALL SYMBOL (.1,3.,.30,LHEAD(3),0.0,20)
                CALL SYMBOL (.1,2.,.35,5HSCALE,0.0,5)
                CALL NUMBER (2.1,2.,.35,SCALE*CMETERS,0.0,-1)
                CALL SYMBOL (3.85,2.,.35,5HFT/IN,0.0,5)
                CALL PLOT (0.0,0.0,999)
                IF (IFLG .NE. 1) GO TO 3
                   CALL SYMBOL (.1,3.,.35,9HLINK PLOT,0.0,9)
                   CALL PLOT (0.0,0.0,999)
          C
            3   CONTINUE
          C
          C        PLOT LINKS, IF CALLED TO
                IF (IFLG .EQ. 1) CALL PTRAF(0)
          C
          *     IF (IFLG .EQ. 1 .AND. ICAL .EQ. 0) CALL PLOT(0.0,0.0,999)
          C
                DO 4 I=1,240
            4   IOVRCAP(I)=0
                RETURN
                END
```

```
         SUBROUTINE  PLOTI      TRACE                         CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE     4

         SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  PLOTI

VARIABLES      SN  TYPE            RELOCATION
  525  BUF         REAL       ARRAY                    14  CHGHT     REAL                DRAW
    6  CH1         REAL                PLOT            16  CMETERS   REAL                DRAW
    5  DH1         REAL                PLOT             0  DNBNDX    REAL                DRAW
    2  DNBNDY      REAL                DRAW             6  DOW       REAL                COMM
  360  DYVOL       REAL       ARRAY    LKARYS           3  D1        REAL                PLOT
   11  EPSLON1     REAL                DRAW            12  EPSLON2   REAL                DRAW
   13  EPSLON3     REAL                DRAW            50  FEXAT     REAL       ARRAY    COMM
   44  FEXGEN      REAL       ARRAY    COMM            60  FINATT    REAL       ARRAY    COMM
   54  FINGEN      REAL       ARRAY    COMM             0  HRVOL     REAL       ARRAY    LKARYS
    4  H1          REAL                PLOT             0  I         INTEGER             COMM
    7  ICAL        INTEGER             DRAW             0  IDRAWN    INTEGER             EQUATES
    0  IFLG        INTEGER              F.P.            3  IOFFSCL   INTEGER             EQUATES
   31  IOPT        INTEGER    ARRAY    COMM           740  IOVRCAP   INTEGER    ARRAY    LKARYS
   24  IPFLG       INTEGER    ARRAY    COMM             2  IPTDRW    INTEGER             EQUATES
   15  ISIZ        INTEGER             DRAW            13  ITM       INTEGER             COMM
    0  ITRKFG      INTEGER             TRUNCAT          0  IUSE      INTEGER    ARRAY    / /
   10  IWINDF      INTEGER             DRAW             3  J         INTEGER             COMM
    4  K           INTEGER             COMM             2  L         INTEGER             COMM
   15  LHEAD       INTEGER    ARRAY    COMM            10  LPLTF     INTEGER             PLOT
   40  NCLB        INTEGER             COMM            42  NDEMVC    INTEGER             COMM
    7  NLIN        INTEGER             PLOT             1  NLINES    INTEGER             VOLS
   43  NNAME       INTEGER             COMM             1  NOTDRW    INTEGER             EQUATES
   37  NPLT        INTEGER             COMM            41  NPLU      INTEGER             COMM
   14  NYEAR       INTEGER             COMM             4  PENX      REAL                DRAW
    5  PENY        REAL                DRAW             1  S         REAL                TRUNCAT
    6  SCALE       REAL                DRAW             2  SFAC      REAL                PLOT
    5  TOD         REAL                COMM            10  TOTATT    REAL                COMM
   12  TOTGEN      REAL                COMM          1350  TOTVOL    REAL                LKARYS
    7  TP          REAL                COMM            64  TP15      REAL                COMM
   11  TTPZ        REAL                COMM             1  UPBNDX    REAL                DRAW
    3  UPBNDY      REAL                DRAW          1320  VOL       REAL       ARRAY    LKARYS
    0  VOLMAX      REAL                VOLS             1  XMAX      REAL                MINMAX
    0  XMIN        REAL                MINMAX          11  XMX       REAL                PLOT
   27  XP          INTEGER             COMM             0  XW        REAL                PLOT
    3  YMAX        REAL                MINMAX           2  YMIN      REAL                MINMAX
   12  YMX         REAL                PLOT            30  YP        INTEGER             COMM
    1  YW          REAL                PLOT             1  Z         INTEGER             COMM

FILE NAMES         MODE
       OUTPUT      FMT

EXTERNALS          TYPE    ARGS
       FLOAT       REAL      1                             NUMBER              6
       PLOT                  3                             PLOTS               3
       PRESCAN               4                             PTRAF               1
       SYMBOL                6
```

```
STATEMENT LABELS
   72  1                      210  2                         247  3
    0  4                        0  15                        472  999     FMT

COMMON BLOCKS   LENGTH
      PLOT          11
      LKARYS       745
      / /          240
      TRUNCAT        2
      EQUATES        4
      COMM          53
      DRAW          15
      VOLS           2
      MINMAX         4

STATISTICS
  PROGRAM LENGTH    2541B    1377
   COMMON LENGTH    1504B     836
    BLANK COMMON     360B     240
```

```
      SUBROUTINE PRESCAN(XMIN,XMAX,YMIN,YMAX)
C
C        FIND MIN AND MAX COORDINATES.
C        CALCULATE LINK LENGTHS.
C        FIND MAX CAPACITY.
C
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
C
      XMIN = 9999999.
      XMAX = -9999999.
      YMIN = 9999999.
      YMAX = -9999999.
C
      DO 1 I=1,NLINK
         IF (X1(I) .LT. XMIN) XMIN = X1(I)
         IF (X2(I) .LT. XMIN) XMIN = X2(I)
         IF (X1(I) .GT. XMAX) XMAX = X1(I)
         IF (X2(I) .GT. XMAX) XMAX = X2(I)
         IF (Y1(I) .LT. YMIN) YMIN = Y1(I)
         IF (Y2(I) .LT. YMIN) YMIN = Y2(I)
         IF (Y1(I) .GT. YMAX) YMAX = Y1(I)
         IF (Y2(I) .GT. YMAX) YMAX = Y2(I)
    1 CONTINUE
       YMIN=YMIN+10.
      RETURN
      END
```

```
      SUBROUTINE  PRESCAN   TRACE                        CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE       2

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  PRESCAN

VARIABLES      SN  TYPE            RELOCATION
 2641  DIST         REAL       ARRAY    LINK          5121  HEIGHT    REAL       ARRAY    LINK
  131  I            INTEGER                           2261  LCAP      INTEGER    ARRAY    LINK
 3601  LCON         INTEGER    ARRAY    LINK             1  NLANE     INTEGER    ARRAY    LINK
    0  NLINK        INTEGER             LINK          5501  NSTOPS    INTEGER    ARRAY    LINK
 3221  VEL          REAL       ARRAY    LINK             0  XMAX      REAL                 F.P.
    0  XMIN         REAL                 F.P.          361  X1        REAL       ARRAY    LINK
 1321  X2           REAL       ARRAY    LINK             0  YMAX      REAL                 F.P.
    0  YMIN         REAL                 F.P.          741  Y1        REAL       ARRAY    LINK
 1701  Y2           REAL       ARRAY    LINK

STATEMENT LABELS
    0  1

COMMON BLOCKS   LENGTH
      LINK       3121

STATISTICS
   PROGRAM LENGTH     156B     110
    COMMON LENGTH    6061B    3121
```

```
      SUBROUTINE PLOTA(LFLG)
C
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /PLOT/   XW,YW,SFAC,D1,H1,DH1,CH1,NLIN,LPLTF,XMX,YMX
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
     2,NDEMVC,NNAME,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
      COMMON/VOLUME/ COUNT(18,240)
      COMMON /RESLT/ TT(240,3),DELA(240,3),PRT(50),QUEUE(240)
      COMMON /CAPMAX/CAPMAX
      COMMON /LKARYS/ HRVOL(240),DYVOL(240),IOVRCAP(240),VOL(24),TOTVOL
      COMMON    IUSE(240)
C
      TOT = 0.0
      DO 1 I=1,NLINK
         SUM = COUNT(1,I) + COUNT(2,I) + COUNT(3,I) + COUNT(4,I)
         HRVOL(I) = HRVOL(I) + SUM
         DYVOL(I) = DYVOL(I) + SUM
         TOT = TOT + SUM
         IF (QUEUE(I) .LT. CAPMAX) GO TO 1
            IF (TOD .LT. 1200.) IOVRCAP(I) = -1
            IF (TOD .GE. 1200.) IOVRCAP(I) = 1
    1 CONTINUE
C
      IHR = (TOD + .00001) / 100.0
      VOL(IHR) = VOL(IHR) + TOT
      TOTVOL = TOTVOL + TOT
      RETURN
      END
```

```
          SYMBOLIC REFERENCE MAP

ENTRY POINTS
     2  PLOTA

VARIABLES       SN  TYPE            RELOCATION
     0  CAPMAX      REAL                 CAPMAX         6  CHI        REAL                PLOT
     0  COUNT       REAL        ARRAY    VOLUME      1320  DELA       REAL       ARRAY    RESLT
     5  DH1         REAL                 PLOT        2641  DIST       REAL       ARRAY    LINK
     6  DOW         REAL                 COMM         360  DYVOL      REAL       ARRAY    LKARYS
     3  D1          REAL                 PLOT          50  FEXAT      REAL       ARRAY    COMM
    44  FEXGEN      REAL        ARRAY    COMM          60  FINATT     REAL       ARRAY    COMM
    54  FINGEN      REAL        ARRAY    COMM        5121  HEIGHT     REAL       ARRAY    LINK
     0  HRVOL       REAL        ARRAY    LKARYS         4  H1         REAL                PLOT
     0  I           INTEGER              COMM         104  IHR        INTEGER
    31  IOPT        INTEGER     ARRAY    COMM         740  IOVRCAP    INTEGER    ARRAY    LKARYS
    24  IPFLG       INTEGER     ARRAY    COMM          13  ITM        INTEGER             COMM
     0  IUSE        INTEGER     ARRAY    / /            3  J          INTEGER             COMM
     4  K           INTEGER              COMM           2  L          INTEGER             COMM
  2261  LCAP        INTEGER     ARRAY    LINK        3601  LCON       INTEGER    ARRAY    LINK
     0  LFLG        INTEGER    *UNUSED    F.P.         15  LHEAD      INTEGER    ARRAY    COMM
    10  LPLTF       INTEGER              PLOT          40  NCLB       INTEGER             COMM
    42  NDEMVC      INTEGER              COMM           1  NLANE      INTEGER    ARRAY    LINK
     7  NLIN        INTEGER              PLOT           0  NLINK      INTEGER             LINK
    43  NNAME       INTEGER              COMM          37  NPLT       INTEGER             COMM
    41  NPLU        INTEGER              COMM        5501  NSTOPS     INTEGER    ARRAY    LINK
    14  NYEAR       INTEGER              COMM        2640  PRT        REAL       ARRAY    RESLT
  2722  QUEUE       REAL        ARRAY    RESLT          2  SFAC       REAL                PLOT
   103  SUM         REAL                                5  TOD        REAL                COMM
   102  TOT         REAL                               10  TOTATT     REAL                COMM
    12  TOTGEN      REAL                 COMM        1350  TOTVOL     REAL                LKARYS
     7  TP          REAL                 COMM          64  TP15       REAL                COMM
     0  TT          REAL        ARRAY    RESLT         11  TTPZ       REAL                COMM
  3221  VEL         REAL        ARRAY    LINK        1320  VOL        REAL       ARRAY    LKARYS
    11  XMX         REAL                 PLOT          27  XP         REAL                COMM
     0  XW          REAL                 PLOT         361  X1         REAL       ARRAY    LINK
  1321  X2          REAL        ARRAY    LINK          12  YMX        REAL                PLOT
    30  YP          REAL                 COMM           1  YW         REAL                PLOT
   741  Y1          REAL        ARRAY    LINK        1701  Y2         REAL       ARRAY    LINK
     1  Z           REAL                 COMM

STATEMENT LABELS
    57  1

COMMON BLOCKS   LENGTH
        LINK      3121
        PLOT        11
        COMM        53
        VOLUME    4320
        RESLT     1730
        CAPMAX       1
        LKARYS     745
        / /        240
```

```
STATISTICS
  PROGRAM LENGTH     105B     69
   COMMON LENGTH  23375B   9981
    BLANK COMMON     360B    240
```

```
      SUBROUTINE PLOTP(LFLG)
C
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /VOLS/ VOLMAX,NLINES
      COMMON /LKARYS/ HRVOL(240),DYVOL(240),IOVRCAP(240),VOL(24),TOTVOL
      COMMON    IUSE(240)
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
     2,NDEMVC,NNAME,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
     +        ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
     +          ,ISIZ,CMETERS
C
C        IF FOR WHOLE DAY, PRINT KEYS, ETC.
C
      DO 015 I=1,240
         IUSE(I) = 0
  015    CONTINUE
C
C        FIND MAXIMUM VOLUME OF TRAFFIC
      VOLMAX = 0.0
      IF (LFLG .EQ. 2) GO TO 2
C           HOUR HEAD
         IBCD = 6HHOURLY
         DO 1 I=1,NLINK
            IF (HRVOL(I) .GT. VOLMAX) VOLMAX = HRVOL(I)
    1    CONTINUE
         GO TO 4
C
C           DAILY HEAD
    2    IBCD = 6H DAILY
         DO 3 I=1,NLINK
            IF (DYVOL(I) .GT. VOLMAX) VOLMAX = DYVOL(I)
    3    CONTINUE
C
C        HEADINGS
    4 CONTINUE
C        ROUND VOLUME SCALE
      I = VOLMAX / NLINES
         IF (I .GE. 1000) I = ((I+500) / 1000) * 1000
         IF (I .GE. 100 ) I = ((I+50 ) / 100 ) * 100
         IF (I .GE. 10  ) I = ((I+5  ) / 10  ) * 10
      VOLMAX = I * NLINES
C
      IF (ICAL .NE. 0) GO TO 5
C           CALCOMP
         POS = 27.
         CH1 = .56
         CH2 = .49
         CH3 = .35
         CH4 = .21
         POSDEC = 1.
```

```
            GO TO 6
C
 5      IF (ICAL .NE. 1) GO TO 6
C            TEKTRONIX
            POS = 5.5
            CH1 = .42
            CH2 = .28
            CH3 = .21
            CH4 = .14
            POSDEC = .4
C
 6      CONTINUE
C           PLOT HEADING
        CALL SYMBOL (.1,POS,CH1,IBCD,0.0,6)
        CALL SYMBOL (6.*CH1,POS,CH1,6HVOLUME,0.0,6)
            POS = POS - POSDEC
        CALL SYMBOL (4.*CH3,POS,CH3,6HTIME =,0.0,6)
        CALL NUMBER (11.*CH3,POS,CH3,TOD,0.0,-1)
            POS = POS - POSDEC - POSDEC
        CALL SYMBOL (2.*CH3,POS,CH2,12HVOLUME SCALE,0.0,12)
            POS = POS - POSDEC
        CALL SYMBOL (.2,POS,CH3,5HNO OF,0.0,5)
        CALL SYMBOL (11.*CH3,POS,CH3,5HNO OF,0.0,5)
            POS = POS - POSDEC
        CALL SYMBOL (.2,POS,CH3,5HLINES,0.0,5)
        CALL SYMBOL (10.*CH3,POS,CH3,8HVEHICLES,0.0,8)
C
        DO 7 LN = 1,NLINES
            POS = POS - CH2
            VEH = LN * VOLMAX / NLINES
            CALL NUMBER (12.*CH3,POS,CH3,VEH,0.0,-1)
            POS = POS - CH2
            CALL NUMBER (3.*CH3,POS,CH3,FLOAT(LN),0.0,-1)
            CALL SYMBOL (13.*CH3,POS,CH4,2HTO,0.0,2)
 7      CONTINUE
C
        IF (ICAL .EQ. 1) CALL PLOT (0.,0.,999)
C
C           IF THIS IS A DAY PLOT, WRITE VOLUME BY HOUR BARGRAPH.
C
        IF (LFLG .NE. 2) GO TO 79
        XBASE = .8
        XTIC = XBASE + .1
C     SIZE AT 100 PERCENT
        FRSIZ = 11.
C     SIZE OF 24 HOURS (IN INCHES)
        HRSIZ = 5.5
        YPOS2 = 12.
        IF (ICAL .EQ. 1) YPOS2 = 6.
        YPOS1 = YPOS2
        POSINC = HRSIZ / 24.
C
        XX = YPOS1 - 18.0*POSINC
        CALL SYMBOL (0.3,XX,.28,11HTIME OF DAY,90.0,11)
C
```

```
      DO 72 IHR = 6,24,6
         HR = IHR
         YPOS1 = YPOS1 - 6.0*POSINC
         CALL NUMBER (0.4,YPOS1,.14,HR,0.0,-1)
   72 CONTINUE
C
      CALL PLOT (XBASE,YPOS2,3)
      DO 76 IHR = 1,24
         YPOS1 = YPOS2
         YPOS2 = YPOS1 - POSINC
         XFRACT = VOL(IHR) / TOTVOL * FRSIZ
         IF (VOL(IHR) .GT. 0.0) GO TO 74
            CALL PLOT (XTIC,YPOS1,2)
            CALL PLOT (XBASE,YPOS1,2)
            CALL PLOT (XBASE,YPOS2,2)
         GO TO 76
C
   74       CALL PLOT (XFRACT+XBASE,YPOS1,2)
            CALL PLOT (XFRACT+XBASE,YPOS2,2)
            CALL PLOT (XBASE ,YPOS2,2)
            CALL PLOT (XBASE ,YPOS1,2)
            CALL PLOT (XBASE ,YPOS2,2)
   76 CONTINUE
C
C        DRAW BASE LINE
      XPOS = XBASE
      XINC = FRSIZ / 10
      DO 78 I=1,5
         VAL = (I-1.0) / 10.0
         CALL NUMBER (XPOS-.05,YPOS2-.25,.11,VAL,0.0,1)
         CALL PLOT (XPOS,YPOS2-.11,3)
         CALL PLOT (XPOS,YPOS2,2)
         CALL PLOT (XPOS+XINC,YPOS2,2)
         XPOS = XPOS + XINC
   78 CONTINUE
C
      CALL SYMBOL (XBASE+.5,YPOS2-.44,.18,16HFRACTIONAL USAGE,0.0,16)
C
      IF (ICAL .EQ. 1) CALL PLOT (0.,0.,999)
C
   79 CONTINUE
C
      CALL PTRAF(LFLG)
C
C        CLEAR ARRAYS
      DO 8 I=1,NLINK
         HRVOL(I) = 0.0
         IF (LFLG .EQ. 2) DYVOL(I) = 0.0
         IF(LFLG.EQ.2) IOVRCAP(I)=0
    8 CONTINUE
      IF (LFLG .NE. 2) RETURN
C        CLEAR HOUR ARRAY
      DO 9 I=1,24
    9    VOL(I) = 0.0
      TOTVOL = 0.0
```

```
C
C     IF (ICAL .EQ. 0) CALL PLOT(0.0,0.0,999)
      RETURN
      END
```

```
      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  PLOTP

VARIABLES     SN  TYPE            RELOCATION
   14  CHGHT       REAL                 DRAW      1032  CH1       REAL
 1033  CH2         REAL                           1034  CH3       REAL
 1035  CH4         REAL                             16  CMETERS   REAL               DRAW
 2641  DIST        REAL      ARRAY      LINK         0  DNBNDX    REAL               DRAW
    2  DNBNDY      REAL                 DRAW         6  DOW       REAL               COMM
  360  DYVOL       REAL      ARRAY      LKARYS      11  EPSLON1   REAL               DRAW
   12  EPSLON2     REAL                 DRAW        13  EPSLON3   REAL               DRAW
   50  FEXAT       REAL      ARRAY      COMM        44  FEXGEN    REAL      ARRAY    COMM
   60  FINATT      REAL      ARRAY      COMM        54  FINGEN    REAL      ARRAY    COMM
 1043  FRSIZ       REAL                           5121  HEIGHT    REAL      ARRAY    LINK
 1052  HR          REAL                           1044  HRSIZ     REAL
    0  HRVOL       REAL      ARRAY      LKARYS       0  I         INTEGER            COMM
 1030  IBCD        INTEGER                           7  ICAL      INTEGER            DRAW
 1051  IHR         INTEGER                          31  IOPT      INTEGER   ARRAY    COMM
  740  IOVRCAP     INTEGER   ARRAY      LKARYS      24  IPFLG     INTEGER   ARRAY    COMM
   15  ISIZ        INTEGER              DRAW        13  ITM       INTEGER            COMM
    0  IUSE        INTEGER   ARRAY      / /         10  IWINDF    INTEGER            DRAW
    3  J           INTEGER              COMM         4  K         INTEGER            COMM
    2  L           INTEGER              COMM      2261  LCAP      INTEGER   ARRAY    LINK
 3601  LCON        INTEGER   ARRAY      LINK         0  LFLG      INTEGER             F.P.
   15  LHEAD       INTEGER   ARRAY      COMM      1037  LN        INTEGER
   40  NCLB        INTEGER              COMM        42  NDEMVC    INTEGER            COMM
    1  NLANE       INTEGER   ARRAY      LINK         1  NLINES    INTEGER            VOLS
    0  NLINK       INTEGER              LINK        43  NNAME     INTEGER            COMM
   37  NPLT        INTEGER              COMM        41  NPLU      INTEGER            COMM
 5501  NSTOPS      INTEGER   ARRAY      LINK        14  NYEAR     INTEGER            COMM
    4  PENX        REAL                 DRAW         5  PENY      REAL               DRAW
 1031  POS         REAL                           1036  POSDEC    REAL
 1047  POSINC      REAL                              6  SCALE     REAL               DRAW
    5  TOD         REAL                 COMM        10  TOTATT    REAL               COMM
   12  TOTGEN      REAL                 COMM      1350  TOTVOL    REAL               LKARYS
    7  TP          REAL                 COMM        64  TP15      REAL               COMM
   11  TTPZ        REAL                 COMM         1  UPBNDX    REAL               DRAW
    3  UPBNDY      REAL                 DRAW      1056  VAL       REAL
 1040  VEH         REAL                           3221  VEL       REAL      ARRAY    LINK
 1320  VOL         REAL      ARRAY      LKARYS       0  VOLMAX    REAL               VOLS
 1041  XBASE       REAL                           1053  XFRACT    REAL
 1055  XINC        REAL                             27  XP        INTEGER            COMM
 1054  XPOS        REAL                           1042  XTIC      REAL
 1050  XX          REAL                            361  X1        REAL      ARRAY    LINK
 1321  X2          REAL      ARRAY      LINK        30  YP        INTEGER            COMM
 1046  YPOS1       REAL                           1045  YPOS2     REAL
  741  Y1          REAL      ARRAY      LINK      1701  Y2        REAL      ARRAY    LINK
    1  Z           INTEGER              COMM

EXTERNALS         TYPE   ARGS
       FLOAT      REAL     1                           NUMBER             6
       PLOT                3                           PTRAF              1
```

```
EXTERNALS            TYPE   ARGS
       SYMBOL                 6

STATEMENT LABELS
    0  1                                  46  2                        0  3
   63  4                                 140  5                      157  6
    0  7                                   0  8                        0  9
    0  15                                  0  72                     364  74
  402  76                                  0  78                     456  79

COMMON BLOCKS     LENGTH
       LINK         3121
       VOLS            2
       LKARYS        745
       / /           240
       COMM           53
       DRAW           15

STATISTICS
   PROGRAM LENGTH    1111B      585
    COMMON LENGTH   75408B     3936
     BLANK COMMON    360B       240
```

```
      SUBROUTINE PTRAF(LFLG)
C        MASTER PLOTTING SUBROUTINE
C
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /LKARYS/ HRVOL(240),DYVOL(240),IOVRCAP(240),VOL(24),TOTVOL
      COMMON      IUSE(240)
      COMMON /EQUATES/ IDRAWN,NOTDRW,IPTDRW,IOFFSCL
      COMMON /MINMAX/ XMIN,XMAX,YMIN,YMAX
      COMMON /PLOT/     XW,YW,SFAC,D1,H1,DH1,CH1,NLIN,LPLTF,XMX,YMX
      COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
     +       ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
     +         ,ISIZ,CMETERS
C
      DNBNDX = XMIN
    1 DNBNDY = YMIN
      UPBNDY = DNBNDY + ISIZ * SCALE
      UPBNDX = XMAX
      IF (IWINDF .EQ. 1 .OR. ICAL .EQ. 1)
     +   UPBNDX = DNBNDX + ISIZ * SCALE
C
    2 PENX = 0.0
      PENY = 0.0
C
      IF (ICAL .NE. 1) GO TO 25
C        WRITE TEKTRONIX SCALE
      CALL SYMBOL (0.1,5.0,.31,8H LOW X =,0.0,8)
      CALL NUMBER (3.1,5.0,.31,DNBNDX,0.0,2)
      CALL SYMBOL (0.2,4.0,.31,8HHIGH X =,0.0,8)
      CALL NUMBER (3.1,4.0,.31,UPBNDX,0.0,2)
      CALL SYMBOL (0.1,3.0,.31,8H LOW Y =,0.0,8)
      CALL NUMBER (3.1,3.0,.31,DNBNDY,0.0,2)
      CALL SYMBOL (0.2,2.0,.31,8HHIGH Y =,0.0,8)
      CALL NUMBER (3.1,2.0,.31,UPBNDY,0.0,2)
C
      CALL PLOT (0.,0.,999)
      CALL PLOT (0.0,0.0,-3)
      GO TO 27
C
C        WRITE CALCOMP OUTLINES
   25 CONTINUE
      SZ = FLOAT(ISIZ)
      CALL PLOT (7.,SZ,3)
      CALL PLOT (10.,SZ,2)
      CALL SYMBOL (6.4,SZ-0.5,.28,2HY=,0.0,2)
      CALL NUMBER (7.0,SZ-0.5,.28,UPBNDY,0.0,-1)
C
      CALL SYMBOL (8.5,13.,.28,2HX=,90.0,2)
      CALL NUMBER (8.5,13.75,.28,DNBNDX,90.0,-1)
C
      CALL PLOT (9.,SZ,3)
      CALL PLOT (9.,0.,2)
C
      CALL PLOT (7.,0.,3)
```

```
      CALL PLOT (10.,0.,2)
      CALL SYMBOL (6.4,.2,.28,2HY=,0.0,2)
      CALL NUMBER (7.0,.2,.28,DNBNDY,0.0,-1)
C
      CALL PLOT (9.0,0.0,-3)
C
   27 CONTINUE
C
      DO 3 I=1,NLINK
         IF (IUSE(I) .NE. 2) IUSE(I) = 0
    3 CONTINUE
C
      CALL PPLOT(LFLG)
      PRINT 999,DNBNDX,UPBNDX,DNBNDY,UPBNDY
  999 FORMAT (= BOUNDS =,4F11.2)
C
C        LABEL ZONES
      IF (LPLTF .EQ. 2 .OR. (LPLTF .EQ. 1 .AND. LFLG .NE. 0))GO TO 35
      CALL ZLABEL
C
   35 CONTINUE
      IF ((PENX .NE. 0.0 .OR. PENY .NE. 0.0) .AND. ICAL .EQ. 1)
     +            CALL PLOT (0.,0.,999)
C
      IF (ICAL .NE. 0) GO TO 37
C        CALCOMP END-PIECE OF OUTLINE
      USC = (UPBNDX-DNBNDX) / SCALE + 3.0
      CALL PLOT (USC-2.,SZ,3)
      CALL PLOT (USC+1.,SZ,2)
      CALL SYMBOL (USC+.2,SZ-0.5,.28,2HY=,0.0,2)
      CALL NUMBER (USC+.8,SZ-0.5,.28,UPBNDY,0.0,-1)
C
      CALL SYMBOL (USC+.2,17.,.28,2HX=,-90.0,2)
      CALL NUMBER (USC+.2,16.40,.28,UPBNDX,-90.0,-1)
C
      CALL PLOT (USC,SZ,3)
      CALL PLOT (USC,0.,2)
C
      CALL PLOT (USC-2.,0.,3)
      CALL PLOT (USC+1.,0.,2)
      CALL SYMBOL (USC+.2,.2,.28,2HY=,0.0,2)
      CALL NUMBER (USC+.8,.2,.28,DNBNDY,0.0,-1)
C
      CALL PLOT (USC+2.5,0.0,-3)
C
   37 CONTINUE
      IF (IWINDF .EQ. 1) RETURN
C
      IF (UPBNDY .GT. YMAX) GO TO 4
         DNBNDY = UPBNDY
         UPBNDY = DNBNDY + ISIZ * SCALE
         GO TO 2
C
    4 IF (ICAL .NE. 1) RETURN
      IF (UPBNDX .GE. XMAX) RETURN
```

```
                DNBNDX = UPBNDX
                GO TO 1
      C
             RETURN
             END
```

CARD NO.	SEVERITY	DIAGNOSTIC
114	I	THERE IS NO PATH TO THIS STATEMENT

```
        SUBROUTINE  PTRAF     TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE      5

        SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  PTRAF

VARIABLES      SN  TYPE              RELOCATION
   14  CHGHT       REAL                    DRAW          6  CHI         REAL                 PLOT
   16  CMETERS     REAL                    DRAW          5  DHI         REAL                 PLOT
 2641  DIST        REAL        ARRAY       LINK          0  DNBNDX      REAL                 DRAW
    2  DNBNDY      REAL                    DRAW        360  DYVOL       REAL        ARRAY    LKARYS
    3  D1          REAL                    PLOT         11  EPSLON1     REAL                 DRAW
   12  EPSLON2     REAL                    DRAW         13  EPSLON3     REAL                 DRAW
 5121  HEIGHT      REAL        ARRAY       LINK          0  HRVOL       REAL        ARRAY    LKARYS
    4  H1          REAL                    PLOT        724  I           INTEGER
    7  ICAL        INTEGER                 DRAW          0  IDRAWN      INTEGER              EQUATES
    3  IOFFSCL     INTEGER                 EQUATES     740  IOVRCAP     INTEGER     ARRAY    LKARYS
    2  IPTDRW      INTEGER                 EQUATES      15  ISIZ        INTEGER              DRAW
    0  IUSE        INTEGER     ARRAY       / /          10  IWINDF      INTEGER              DRAW
 2261  LCAP        INTEGER     ARRAY       LINK       3601  LCON        INTEGER     ARRAY    LINK
    0  LFLG        INTEGER                  F.P.        10  LPLTF       INTEGER              PLOT
    1  NLANE       INTEGER     ARRAY       LINK          7  NLIN        INTEGER              PLOT
    0  NLINK       INTEGER                 LINK          1  NOTDRW      INTEGER              EQUATES
 5501  NSTOPS      INTEGER     ARRAY       LINK          4  PENX        REAL                 DRAW
    5  PENY        REAL                    DRAW          6  SCALE       REAL                 DRAW
    2  SFAC        REAL                    PLOT        723  SZ          REAL
 1350  TOTVOL      REAL                    LKARYS        1  UPBNDX      REAL                 DRAW
    3  UPBNDY      REAL                    DRAW        725  USC         REAL
 3221  VEL         REAL        ARRAY       LINK       1320  VOL         REAL        ARRAY    LKARYS
    1  XMAX        REAL                    MINMAX        0  XMIN        REAL                 MINMAX
   11  XMX         REAL                    PLOT          0  XW          REAL                 PLOT
  361  X1          REAL        ARRAY       LINK       1321  X2          REAL        ARRAY    LINK
    3  YMAX        REAL                    MINMAX        2  YMIN        REAL                 MINMAX
   12  YMX         REAL                    PLOT          1  YW          REAL                 PLOT
  741  Y1          REAL        ARRAY       LINK       1701  Y2          REAL        ARRAY    LINK

FILE NAMES         MODE
      OUTPUT        FMT

EXTERNALS           TYPE   ARGS
        FLOAT       REAL     1                              NUMBER             6
        PLOT                 3                              PPLOT              1
        SYMBOL               6                              ZLABEL             0

STATEMENT LABELS
    6  1                                  30  2                                          0  3
  322  4                                  63  25                                       130  27
  173  35                                304  37                                       663  999     FMT

COMMON BLOCKS    LENGTH
        LINK       3121
        LKARYS      745
        / /         240
        EQUATES       4
        MINMAX        4
```

```
      SUBROUTINE  PTRAF      TRACE                    CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE      6

  COMMON BLOCKS   LENGTH
        PLOT         11
        DRAW         15

  STATISTICS
    PROGRAM LENGTH     752B      490
     COMMON LENGTH    7474B     3900
      BLANK COMMON     360B      240
```

```
      SUBROUTINE PPLOT(LFLG)
C        PLOT ALL LINKS, STARTING FROM NUMBER 1, AND TAKING THE "CLOSEST" NEXT.
C        ONCE PLOTTED, THE IUSE ARRAY IS CHANGED FROM "NOTUSED" TO "DRAWN" OR
C            "PTUSED".
C
      COMMON /EQUATES/ IDRAWN,NOTDRW,IPTDRW,IOFFSCL
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /LKARYS/ HRVOL(240),DYVOL(240),IOVRCAP(240),VOL(24),TOTVOL
      COMMON    IUSE(240)
C
      LINKNO = 1
      DO 1 KK = 1,NLINK
         CALL PLOTLK(LINKNO,LFLG)
         NEWLINK = 0
        IF(LCON(LINKNO,3) .NE. 0 .AND. IUSE(LCON(LINKNO,3)) .EQ. NOTDRW)
     +         NEWLINK = LCON(LINKNO,3)
        IF(LCON(LINKNO,2) .NE. 0 .AND. IUSE(LCON(LINKNO,2)) .EQ. NOTDRW)
     +        NEWLINK = LCON(LINKNO,2)
        IF(LCON(LINKNO,1) .NE. 0 .AND. IUSE(LCON(LINKNO,1)) .EQ. NOTDRW)
     +        NEWLINK = LCON(LINKNO,1)
         IF (NEWLINK .EQ. 0) CALL CLOSEST(NEWLINK)
         IF (NEWLINK .EQ. 0) RETURN
         LINKNO = NEWLINK
    1 CONTINUE
      PRINT 998,KK,LINKNO
  998 FORMAT (2I6)
      PRINT 999,(IUSE(I),I=1,NLINK)
  999 FORMAT (12I5)
      RETURN
      END
```

```
        SUBROUTINE  PPLOT     TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE     2

        SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  PPLOT

VARIABLES      SN  TYPE              RELOCATION
 2641  DIST         REAL        ARRAY    LINK              360  DYVOL      REAL       ARRAY    LKARYS
 5121  HEIGHT       REAL        ARRAY    LINK                0  HRVOL      REAL       ARRAY    LKARYS
  141  I            INTEGER                                  0  IDRAWN     INTEGER             EQUATES
    3  IOFFSCL      INTEGER              EQUATES           740  IOVRCAP    INTEGER    ARRAY    LKARYS
    2  IPTDRW       INTEGER              EQUATES             0  IUSE       INTEGER    ARRAY    / /
  137  KK           INTEGER                               2261  LCAP       INTEGER    ARRAY    LINK
 3601  LCON         INTEGER     ARRAY    LINK                0  LFLG       INTEGER              F.P.
  136  LINKNO       INTEGER                                140  NEWLINK    INTEGER
    1  NLANE        INTEGER     ARRAY    LINK                0  NLINK      INTEGER             LINK
    1  NOTDRW       INTEGER              EQUATES          5501  NSTOPS     INTEGER    ARRAY    LINK
 1350  TOTVOL       REAL                 LKARYS           3221  VEL        REAL       ARRAY    LINK
 1320  VOL          REAL        ARRAY    LKARYS            361  X1         REAL       ARRAY    LINK
 1321  X2           REAL        ARRAY    LINK              741  Y1         REAL       ARRAY    LINK
 1701  Y2           REAL        ARRAY    LINK

FILE NAMES         MODE
      OUTPUT        FMT

EXTERNALS           TYPE   ARGS
      CLOSEST                1                            PLOTLK              2

STATEMENT LABELS
    0  1                                  132  998    FMT                        134  999    FMT

COMMON BLOCKS   LENGTH
      EQUATES        4
      LINK        3121
      LKARYS       745
      / /          240

STATISTICS
  PROGRAM LENGTH     144B     100
  COMMON LENGTH     7436B    3870
    BLANK COMMON     360B     240
```

```
      SUBROUTINE CLOSEST(NEWLK)
C        FIND CLOSEST UNDRAWN LINK AND PUT ITS NUMBER IN NEWLK.
C         IF NONE, RETURN WITH NEWLK=0.
C
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /LKARYS/ HRVOL(240),DYVOL(240),IOVRCAP(240),VOL(24),TOTVOL
      COMMON     IUSE(240)
      COMMON /EQUATES/ IDRAWN,NOTDRW,IPTDRW,IOFFSCL
      NEWLK = 0
      DISTANC = 999999999999.0
      DO 1 I=1,NLINK
         TEMP = PDIST(X1(I),Y1(I))
         TEMP2= PDIST(X2(I),Y2(I))
         IF ((TEMP .GE. DISTANC .AND. TEMP2 .GE. DISTANC) .OR.
     +    IUSE(I) .NE. NOTDRW)  GO TO 1
         DISTANC = AMIN1( TEMP,TEMP2 )
         NEWLK = I
    1 CONTINUE
      RETURN
      END
```

```
      SUBROUTINE  CLOSEST   TRACE                            CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE       2

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  CLOSEST

VARIABLES       SN  TYPE             RELOCATION
 2641  DIST         REAL      ARRAY    LINK            71  DISTANC   REAL
  360  DYVOL        REAL      ARRAY    LKARYS        5121  HEIGHT    REAL      ARRAY    LINK
    0  HRVOL        REAL      ARRAY    LKARYS          72  I         INTEGER
    0  IDRAWN       INTEGER            EQUATES          3  IOFFSCL   INTEGER            EQUATES
  740  IOVRCAP      INTEGER   ARRAY    LKARYS           2  IPTDRW    INTEGER            EQUATES
    0  IUSE         INTEGER   ARRAY    / /           2261  LCAP      INTEGER   ARRAY    LINK
 3601  LCON         INTEGER   ARRAY    LINK             0  NEWLK     INTEGER             F.P.
    1  NLANE        INTEGER   ARRAY    LINK             0  NLINK     INTEGER            LINK
    1  NOTDRW       INTEGER            EQUATES       5501  NSTOPS    INTEGER   ARRAY    LINK
   73  TEMP         REAL                               74  TEMP2     REAL
 1350  TOTVOL       REAL               LKARYS        3221  VEL       REAL      ARRAY    LINK
 1320  VOL          REAL      ARRAY    LKARYS         361  X1        REAL      ARRAY    LINK
 1321  X2           REAL      ARRAY    LINK           741  Y1        REAL      ARRAY    LINK
 1701  Y2           REAL      ARRAY    LINK

EXTERNALS             TYPE    ARGS
       AMIN1        REAL      2                            PDIST     REAL      2

STATEMENT LABELS
   55  1

COMMON BLOCKS    LENGTH
       LINK         3121
       LKARYS        745
       / /           240
       EQUATES         4

STATISTICS
  PROGRAM LENGTH      77B       63
   COMMON LENGTH    7436B     3870
    BLANK COMMON     360B      240
```

```
FUNCTION     PDIST      TRACE                    CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE      1

              FUNCTION PDIST(A,B)
        C        FINDS DISTANCE BETWEEN CURRENT PEN POSITION (PENX,PENY) AND POINT (A,B).
        C
              COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
             +         ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
             +         ,ISIZ,CMETERS
        C
              DELX = ABS( PENX-A )
              DELY = ABS( PENY-B )
        C
        C        CALCOMP DISTANCE FUNCTION
              PDIST = 1.41421356237 * AMIN1(DELX,DELY) + ABS(DELX-DELY)
        C
              RETURN
              END
```

```
        FUNCTION   PDIST    TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE      2

        SYMBOLIC REFERENCE MAP

  ENTRY POINTS
      2  PDIST

  VARIABLES      SN  TYPE          RELOCATION
      0  A           REAL               F.P.        0  B          REAL              F.P.
     14  CHGHT       REAL              DRAW        16  CMETERS    REAL             DRAW
     45  DELX        REAL                          46  DELY       REAL
      0  DNBNDX      REAL              DRAW         2  DNBNDY     REAL             DRAW
     11  EPSLON1     REAL              DRAW        12  EPSLON2    REAL             DRAW
     13  EPSLON3     REAL              DRAW         7  ICAL       INTEGER          DRAW
     15  ISIZ        INTEGER           DRAW        10  IWINDF     INTEGER          DRAW
     44  PDIST       REAL                           4  PENX       REAL             DRAW
      5  PENY        REAL              DRAW         6  SCALE      REAL             DRAW
      1  UPBNDX      REAL              DRAW         3  UPBNDY     REAL             DRAW

  EXTERNALS          TYPE   ARGS
        ABS          REAL     1                        AMIN1      REAL      2

  COMMON BLOCKS   LENGTH
        DRAW          15

  STATISTICS
    PROGRAM LENGTH      47B     39
     COMMON LENGTH      17B     15
```

```
      SUBROUTINE PLOTLK (LK,LFLG)
C        FINDS VOLUME OF TRAFFIC, PLOTS EACH HALF STREET WITH PROPER WIDTH,
C          MARKS LINK DRAWN OR PARTDRAWN, MARKS IF OVER-CAPACITY, LABELS STREETS.
C
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /RESLT/ TT(240,3),DELA(240,3),PRT(50),QUEUE(240)
      COMMON /LKARYS/ HRVOL(240),DYVOL(240),IOVRCAP(240),VOL(24),TOTVOL
      COMMON    IUSE(240)
      COMMON /TRUNCAT/ ITRKFG,S
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
     2,NDEMVC,NNAME,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /CAPMAX/CAPMAX
C
C        SINCE LINES MAY BE TRUNCATED, MOVE INTO TEMPORARY STORAGE
CXX   PRINT 999,LK
  999 FORMAT (* LINK*,I3)
      ITRKFG = 2
      A = X1(LK)
      B = Y1(LK)
      C = X2(LK)
      D = Y2(LK)
      CALL PLOTLN (A,B,C,D,III) , RETURNS (8)
C
      CALL PFNDVOL(LK,NL,LFLG,LABL)
CXX   PRINT 998,LK,NL
  998 FORMAT (* LINK*,I4,*  - *,I4)
      IF (NL .EQ. 0) GO TO 3
      DO 2 I=1,NL
         CALL PDISP (A,B,C,D)
         CALL PLOTLN (A,B,C,D,III) , RETURNS (8)
    2 CONTINUE
C
C   HANDLE OVER-CAPACITY
      IF (LFLG.EQ.1.AND.QUEUE(LK).LT. CAPMAX.AND.IOPT(4).EQ.0) GO TO 3
      IF ( IOVRCAP(LK) .EQ. 0)     GO TO 3
C           THIS LINK HAS TOO MANY CARS
         IF (LFLG .EQ. 1 .AND. TOD .LT. 1200.) MORNFG = -1
         IF (LFLG .EQ. 1 .AND. TOD .GE. 1200.) MORNFG = 1
      IOVRCAP(LK)=MORNFG
         IF (LFLG .EQ. 2)                         MORNFG = IOVRCAP(LK)
      CALL OVERCAP (A,B,C,D,MORNFG)
C
    3 CONTINUE
C
C    LABEL LINKS
    6 CONTINUE
      IF (LABL .GE. 10) GO TO 61
         ENCODE (10,6001,IBCD) LABL
         NCHAR = 1
         GO TO 65
C
```

```
   61 IF (LABL .GE. 100) GO TO 62
      ENCODE (10,6002,IBCD) LABL
      NCHAR = 2
      GO TO 65
C
   62 IF (LABL .GE. 1000) GO TO 63
      ENCODE (10,6003,IBCD) LABL
      NCHAR = 3
      GO TO 65
C
   63 IF (LABL .GE. 10000) STOP 6666
      ENCODE (10,6004,IBCD) LABL
      NCHAR = 4
      GO TO 65
   65 CALL LABEL (A,B,C,D,IBCD,NCHAR)
 6001 FORMAT (I1)
 6002 FORMAT (I2)
 6003 FORMAT (I3)
 6004 FORMAT (I4)
C
    8 IUSE(LK) = ITRKFG
      RETURN
      END
```

```
        SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  PLOTLK

VARIABLES      SN  TYPE            RELOCATION
  255  A           REAL                                   256  B          REAL                  
  257  C           REAL                                     0  CAPMAX     REAL                  CAPMAX
  260  D           REAL                                  1320  DELA       REAL        ARRAY     RESLT
 2641  DIST        REAL        ARRAY    LINK                6  DOW        REAL                  COMM
  360  DYVOL       REAL        ARRAY    LKARYS             50  FEXAT      REAL        ARRAY     COMM
   44  FEXGEN      REAL        ARRAY    COMM               60  FINATT     REAL        ARRAY     COMM
   54  FINGEN      REAL        ARRAY    COMM             5121  HEIGHT     REAL        ARRAY     LINK
    0  HRVOL       REAL        ARRAY    LKARYS              0  I          INTEGER               COMM
  265  IBCD        INTEGER                                261  III        INTEGER
   31  IOPT        INTEGER     ARRAY    COMM              740  IOVRCAP    INTEGER     ARRAY     LKARYS
   24  IPFLG       INTEGER     ARRAY    COMM               13  ITM        INTEGER               COMM
    0  ITRKFG      INTEGER              TRUNCAT             0  IUSE       INTEGER     ARRAY     / /
    3  J           INTEGER              COMM                4  K          INTEGER               COMM
    2  L           INTEGER              COMM              263  LABL       INTEGER
 2261  LCAP        INTEGER     ARRAY    LINK             3601  LCON       INTEGER     ARRAY     LINK
    0  LFLG        INTEGER               F.P.              15  LHEAD      INTEGER     ARRAY     COMM
    0  LK          INTEGER               F.P.             264  MORNFG     INTEGER
  266  NCHAR       INTEGER                                 40  NCLB       INTEGER               COMM
   42  NDEMVC      INTEGER              COMM              262  NL         INTEGER
    1  NLANE       INTEGER     ARRAY    LINK                0  NLINK      INTEGER               LINK
   43  NNAME       INTEGER              COMM               37  NPLT       INTEGER               COMM
   41  NPLU        INTEGER              COMM             5501  NSTOPS     INTEGER     ARRAY     LINK
   14  NYEAR       INTEGER              COMM             2640  PRT        REAL        ARRAY     RESLT
 2722  QUEUE       REAL        ARRAY    RESLT               1  S          REAL                  TRUNCAT
    5  TOD         REAL                 COMM               10  TOTATT     REAL                  COMM
   12  TOTGEN      REAL                 COMM             1350  TOTVOL     REAL                  LKARYS
    7  TP          REAL                 COMM               64  TP15       REAL                  COMM
    0  TT          REAL        ARRAY    RESLT              11  TTPZ       REAL                  COMM
 3221  VEL         REAL        ARRAY    LINK             1320  VOL        REAL        ARRAY     LKARYS
   27  XP          INTEGER              COMM              361  X1         REAL        ARRAY     LINK
 1321  X2          REAL        ARRAY    LINK               30  YP         INTEGER               COMM
  741  Y1          REAL        ARRAY    LINK             1701  Y2         REAL        ARRAY     LINK
    1  Z           INTEGER              COMM

EXTERNALS         TYPE    ARGS
       LABEL               6                                    OVERCAP                 5
       PDISP               4                                    PFNDVOL                 4
       PLOTLN              5

STATEMENT LABELS
    0  2                                113  3                                     0  6              INACTIVE
  172  8                                126  61                                  141  62
  154  63                               170  65                                  241  998      FMT  NO REFS
  236  999       FMT  NO REFS           244  6001      FMT                       246  6002     FMT
  250  6003      FMT                    252  6004      FMT
```

```
COMMON BLOCKS   LENGTH
       LINK       3121
       RESLT      1730
       LKARYS      745
       / /         240
       TRUNCAT       2
       COMM         53
       CAPMAX        1

STATISTICS
   PROGRAM LENGTH      271B      185
     COMMON LENGTH   13024B     5652
      BLANK COMMON     360B      240
```

```
      SUBROUTINE PFNDVOL (LK,NL,LFLG,LABL)
C        FIND THE VOLUME OF TRAFFIC ON THIS LINK, AND CONVERT TO NUMBER
C        OF LINES.
      COMMON /VOLS/ VOLMAX,NLINES
      COMMON /LKARYS/ HRVOL(240),DYVOL(240),IOVRCAP(240),VOL(24),TOTVOL
      COMMON    IUSE(240)
C
      IF (LFLG .NE. 0) GO TO 2
         NL = 0
         LABL = LK
         RETURN
C
    2 IF (LFLG .NE. 1) GO TO 3
         NL = (HRVOL(LK)-.001) * NLINES / VOLMAX
         LABL = HRVOL(LK)
         RETURN
C
    3 IF (LFLG .NE. 2) STOP 5555
         NL = (DYVOL(LK)-.001) * NLINES / VOLMAX
         LABL = DYVOL(LK)
      RETURN
      END
```

```
      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  PFNDVOL

VARIABLES      SN  TYPE             RELOCATION
  360  DYVOL       REAL        ARRAY   LKARYS            0  HRVOL     REAL       ARRAY   LKARYS
  740  IOVRCAP     INTEGER     ARRAY   LKARYS            0  IUSE      INTEGER    ARRAY   / /
    0  LABL        INTEGER               F.P.            0  LFLG      INTEGER              F.P.
    0  LK          INTEGER               F.P.            0  NL        INTEGER              F.P.
    1  NLINES      INTEGER             VOLS           1350  TOTVOL    REAL               LKARYS
 1320  VOL         REAL        ARRAY   LKARYS            0  VOLMAX    REAL               VOLS

STATEMENT LABELS
   14  2                                    34  3

COMMON BLOCKS   LENGTH
      VOLS          2
      LKARYS      745
      / /         240

STATISTICS
  PROGRAM LENGTH      61B     49
   COMMON LENGTH    1353B    747
    BLANK COMMON     360B    240
```

```
      SUBROUTINE PDISP (X1,Y1,X2,Y2)
C        DISPLACE LINE "EPSILON" DISTANCE TO THE RIGHT (FOR THICKNESS)
      COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
     +         ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
     +          ,ISIZ,CMETERS
C
C     ENTRY FOR THICKNESS DISPLACEMENT (EPSLON1)
      EPSILON = EPSLON1
C
    1 CONTINUE
C
      IF ( ABS(X1-X2) .GT. .00001) GO TO 2
         AA = EPSILON
         BB = 0.0
         GO TO 5
    2 IF ( ABS(Y1-Y2) .GT. .00001) GO TO 3
         AA = 0.0
         BB = EPSILON
         GO TO 5
    3 PSLOPE = ABS( (X2-X1) / (Y2-Y1) )
         AA = SQRT( EPSILON**2 / (PSLOPE**2 + 1.0) )
         BB = PSLOPE * AA
C
    5 CONTINUE
      IF (X1 .GT. X2) GO TO 6
         Y1 = Y1 - BB
         Y2 = Y2 - BB
         GO TO 7
    6 CONTINUE
         Y1 = Y1 + BB
         Y2 = Y2 + BB
    7 CONTINUE
      IF (Y1 .GT. Y2) GO TO 8
         X1 = X1 + AA
         X2 = X2 + AA
         GO TO 9
    8 CONTINUE
         X1 = X1 - AA
         X2 = X2 - AA
C
    9 CONTINUE
      RETURN
C
C     ENTRY FOR OVER-CAPACITY LINES (LENGTH OF EACH LINE)
      ENTRY PDISP2
      EPSILON = EPSLON2
      GO TO 1
C
C     ENTRY FOR DISTANCE BETWEEN OVER-CAPACITY LINES
      ENTRY PDISP3
      EPSILON = EPSLON3
      GO TO 1
C
C     ENTRY FOR DISTANCE OF LABEL FROM LINK
      ENTRY PDISP4
```

```
      EPSILON = EPSLON2 + CHGHT
      GO TO 1
C
      END
```

```
      SUBROUTINE  PDISP     TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE      3

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  PDISP          122  PDISP2         134  PDISP3          146  PDISP4

VARIABLES       SN  TYPE               RELOCATION
  167  AA           REAL                               170  BB          REAL
   14  CHGHT        REAL          DRAW                  16  CMETERS     REAL                  DRAW
    0  DNBNDX       REAL          DRAW                   2  DNBNDY      REAL                  DRAW
  166  EPSILON      REAL                                11  EPSLON1     REAL                  DRAW
   12  EPSLON2      REAL          DRAW                  13  EPSLON3     REAL                  DRAW
    7  ICAL         INTEGER       DRAW                  15  ISIZ        INTEGER               DRAW
   10  IWINDF       INTEGER       DRAW                   4  PENX        REAL                  DRAW
    5  PENY         REAL          DRAW                 171  PSLOPE      REAL
    6  SCALE        REAL          DRAW                   1  UPBNDX      REAL                  DRAW
    3  UPBNDY       REAL          DRAW                   0  X1          REAL                   F.P.
    0  X2           REAL           F.P.                  0  Y1          REAL                   F.P.
    0  Y2           REAL           F.P.

EXTERNALS           TYPE   ARGS
      ABS           REAL      1                             SQRT        REAL         1

STATEMENT LABELS
    7  1                              22  2                                              34  3
   55  5                              70  6                                              78  7
  111  8                             117  9

COMMON BLOCKS     LENGTH
      DRAW          15

STATISTICS
   PROGRAM LENGTH     172B      122
     COMMON LENGTH     17B       15
```

```
SUBROUTINE  PLOTLN    TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE     1

              SUBROUTINE PLOTLN (X1,Y1,X2,Y2,ITYP) , RETURNS (A)
        C        DRAW LINE BETWEEN POINT (X1,Y1) AND (X2,Y2).  IF THE LINE IS OFF
        C           THE PLOT PAGE, TRUNCATE AND SET FLAG.
              COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
             +           ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
             +           ,ISIZ,CMETERS
        C
              DATA IONE/1/,ITWO/2/,ITHREE/3/,IFOUR/4/
        C
        C        CHECK IF LINE IS OUTSIDE BOUNDRY
              CALL CHKBND(X1,Y1,X2,Y2) , RETURNS (9)
        C
        C        FIND DISTANCES FROM PEN TO LINE ENDS
              D1 = PDIST(X1,Y1)
              D2 = PDIST(X2,Y2)
        C
        C        IS PEN ALREADY AT STARTING POINT
        C     IF (D1 .LT. .0001) GO TO 4
        C     IF (D2 .LT. .0001) GO TO 2
        C
        C        MOVE PEN TO START
              IF (D1 .LT. D2) GO TO 3
        C        MOVE PEN TO (X2,Y2)
                 CALL PLTSCL (X2,Y2,3)
        CXX   PRINT 999,IONE,X2,Y2
          999 FORMAT (* POINT*,I5,2F10.2)
        C        DRAW LINE TO (X1,Y1)
         2       CALL PLTSCL (X1,Y1,2)
        CXX   PRINT 999,ITWO,X1,Y1
              PENX = X1
              PENY = Y1
              GO TO 8
        C
        C        MOVE PEN TO (X1,Y1)
         3       CALL PLTSCL (X1,Y1,3)
        CXX   PRINT 999,ITHREE,X1,Y1
        C        DRAW LINE TO (X2,Y2)
         4       CALL PLTSCL (X2,Y2,2)
        CXX   PRINT 999,IFOUR,X2,Y2
              PENX = X2
              PENY = Y2
              GO TO 8
        C
         8    RETURN
        C
         9    RETURN A
        C
              END
```

```
        SUBROUTINE  PLOTLN     TRACE                                      CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.        PAGE      2

        SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  PLOTLN

VARIABLES      SN  TYPE            RELOCATION
    0  A           RETURNS                          14  CHGHT      REAL                DRAW
   16  CMETERS     REAL                 DRAW         0  DNBNDX     REAL                DRAW
    2  DNBNDY      REAL                 DRAW       127  D1         REAL
  130  D2          REAL                             11  EPSLON1    REAL                DRAW
   12  EPSLON2     REAL                 DRAW        13  EPSLON3    REAL                DRAW
    7  ICAL        INTEGER              DRAW       121  IFOUR      INTEGER
  116  IONE        INTEGER                          15  ISIZ       INTEGER             DRAW
  120  ITHREE      INTEGER                         117  ITWO       INTEGER
    0  ITYP        INTEGER    *UNUSED    F.P.       10  IWINDF     INTEGER             DRAW
    4  PENX        REAL                 DRAW         5  PENY       REAL                DRAW
    6  SCALE       REAL                 DRAW         1  UPBNDX     REAL                DRAW
    3  UPBNDY      REAL                 DRAW         0  X1         REAL                 F.P.
    0  X2          REAL                  F.P.        0  Y1         REAL                 F.P.
    0  Y2          REAL                  F.P.

EXTERNALS              TYPE   ARGS
        CHKBND                  4                       PDIST      REAL         2
        PLTSCL                  3

STATEMENT LABELS
    0  2               INACTIVE          51  3                                           0  4              INACTIVE
   67  8                                 71  9                                         122  999       FMT  NO REFS

COMMON BLOCKS    LENGTH
        DRAW          15

STATISTICS
   PROGRAM LENGTH        131B     89
    COMMON LENGTH         17B     15
```

```
      SUBROUTINE PLTSCL(A,B,I)
C        SCALES PLOT AND CALLS CALCOMP ROUTINE
      COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
     +          ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
     +          ,ISIZ,CMETERS
      C = (A-DNBNDX) / SCALE
      D = (B-DNBNDY) / SCALE
      CALL PLOT (C,D,I)
      RETURN
      END
```

```
      SYMBOLIC REFERENCE MAP

ENTRY POINTS
     2  PLTSCL

VARIABLES       SN  TYPE            RELOCATION
     0  A           REAL               F.P.          0  B           REAL                F.P.
    25  C           REAL                            14  CHGHT       REAL                DRAW
    16  CMETERS     REAL              DRAW          26  D           REAL
     0  DNBNDX      REAL              DRAW           2  DNBNDY      REAL                DRAW
    11  EPSLON1     REAL              DRAW          12  EPSLON2     REAL                DRAW
    13  EPSLON3     REAL              DRAW           0  I           INTEGER             F.P.
     7  ICAL        INTEGER           DRAW          15  JSIZ        INTEGER             DRAW
    10  IWINDF      INTEGER           DRAW           4  PENX        REAL                DRAW
     5  PENY        REAL              DRAW           6  SCALE       REAL                DRAW
     1  UPBNDX      REAL              DRAW           3  UPBNDY      REAL                DRAW

EXTERNALS           TYPE   ARGS
        PLOT                 3

COMMON BLOCKS   LENGTH
        DRAW        15

STATISTICS
  PROGRAM LENGTH      27B      23
   COMMON LENGTH      17B      15
```

```
      SUBROUTINE CHKBND(X1,Y1,X2,Y2) , RETURNS (A)
C        CHECK THE BOUNDRIES OF THE PLOT; TRUNCATE THE LINE IF NECESSARY.
C
      COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
     +          ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
     +          ,ISIZ,CMETERS
      COMMON /TRUNCAT/ ITRKFG,S
      COMMON /EQUATES/ IDRAWN,NOTDRW,IPTDRW,IOFFSCL
C
C        CHECK POINT (X1,Y1)
      S = 0.0
      IF (X1 .LT. DNBNDX) CALL XPTMOV(X1,Y1,X2,Y2,DNBNDX,0),RETURNS(8)
      IF (X1 .GT. UPBNDX) CALL XPTMOV(X1,Y1,X2,Y2,UPBNDX,1),RETURNS(8)
      IF (Y1 .LT. DNBNDY) CALL YPTMOV(X1,Y1,X2,Y2,DNBNDY,0),RETURNS(8)
      IF (Y1 .GT. UPBNDY) CALL YPTMOV(X1,Y1,X2,Y2,UPBNDY,1),RETURNS(8)
C        CHECK IF POINT IS NOW WITHIN BOUNDS
      IF (X1 .LT. DNBNDX .OR. X1 .GT. UPBNDX .OR.
     +    Y1 .LT. DNBNDY .OR. Y1 .GT. UPBNDY)  GO TO 8
C
C        CHECK POINT (X2,Y2)
      IF (X2 .LT. DNBNDX) CALL XPTMOV(X2,Y2,X1,Y1,DNBNDX,0),RETURNS(8)
      IF (X2 .GT. UPBNDX) CALL XPTMOV(X2,Y2,X1,Y1,UPBNDX,1),RETURNS(8)
      IF (Y2 .LT. DNBNDY) CALL YPTMOV(X2,Y2,X1,Y1,DNBNDY,0),RETURNS(8)
      IF (Y2 .GT. UPBNDY) CALL YPTMOV(X2,Y2,X1,Y1,UPBNDY,1),RETURNS(8)
C        CHECK IF POINT IS NOW WITHIN BOUNDS
      IF (X2 .LT. DNBNDX .OR. X2 .GT. UPBNDX .OR.
     +    Y2 .LT. DNBNDY .OR. Y2 .GT. UPBNDY)  GO TO 8
C
C         CHECK IF STILL A LINE (NOT A POINT)
      IF (ABS(X1-X2) + ABS(Y1-Y2) .LT. .0001)  GO TO 8
C
      RETURN
C
C        NONE OF THE LINE IS WITHIN BOUNDS
    8 ITRKFG = -1
      RETURN A
      END
```

```
          SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  CHKBND

VARIABLES        SN  TYPE              RELOCATION
    0  A             RETURNS                          14  CHGHT     REAL                DRAW
   16  CMETERS       REAL                   DRAW       0  DNBNDX    REAL                DRAW
    2  DNBNDY        REAL                   DRAW      11  EPSLON1   REAL                DRAW
   12  EPSLON2       REAL                   DRAW      13  EPSLON3   REAL                DRAW
    7  ICAL          INTEGER                DRAW       0  IDRAWN    INTEGER             EQUATES
    3  IOFFSCL       INTEGER                EQUATES    2  IPTDRW    INTEGER             EQUATES
   15  ISIZ          INTEGER                DRAW       0  ITRKFG    INTEGER             TRUNCAT
   10  IWINDF        INTEGER                DRAW       1  NOTDRW    INTEGER             EQUATES
    4  PENX          REAL                   DRAW       5  PENY      REAL                DRAW
    1  S             REAL                   TRUNCAT    6  SCALE     REAL                DRAW
    1  UPBNDX        REAL                   DRAW       3  UPBNDY    REAL                DRAW
    0  X1            REAL                     F.P.     0  X2        REAL                 F.P.
    0  Y1            REAL                     F.P.     0  Y2        REAL                 F.P.

EXTERNALS              TYPE    ARGS
          ABS          REAL      1                       XPTMOV                 6
          YPTMOV                 6

STATEMENT LABELS
  202  8

COMMON BLOCKS    LENGTH
          DRAW       15
          TRUNCAT     2
          EQUATES     4

STATISTICS
  PROGRAM LENGTH      264B      180
    COMMON LENGTH      25B       21
```

```
SUBROUTINE PTMOVE    TRACE                              CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE     1

          SUBROUTINE PTMOVE(XA,YA,XB,YB,BOUND,IB) , RETURNS (A)
C            MOVE POINT (XA,YA) WITHIN ONE OF THE BOUNDS
          COMMON /TRUNCAT/ ITRKFG,S
C
          ENTRY XPTMOV
      999 FORMAT (* TRUNCATE*,5F10.2)
CXX       PRINT 999,XA,YA,XB,YB,BOUND
C            MOVE X TO BOUND; CALCULATE CORRESPONDING Y.
             IF (S .NE. 0) GO TO 1
                DIF = XB - XA
                   IF (ABS(DIF) .LT. .00001) RETURN A
                DIF2 = YB - YA
                   IF (ABS(DIF2) .LT. .00001) GO TO 2
                S = DIF2 / DIF
        1    YA = YB - (XB-BOUND) * S
        2    XA = BOUND
             IF (IB .EQ. 1) ITRKFG = 1
CXX       PRINT 999,XA,YA,XB,YB,BOUND
          RETURN
C
          ENTRY YPTMOV
CXX       PRINT 999,XA,YA,XB,YB,BOUND
C            MOVE Y TO BOUND; CALCULATE CORRESPONDING X.
             IF (S .NE. 0) GO TO 5
                DIF  = XB - XA
                   IF (ABS(DIF) .LT. .00001) GO TO 6
                DIF2 = YB - YA
                   IF (ABS(DIF2) .LT. .00001) RETURN A
C            SLOPE
                S = DIF2 / DIF
        5    XA = XB - (YB-BOUND) / S
        6    YA = BOUND
             IF (IB .EQ. 1) ITRKFG = 1
CXX       PRINT 999,XA,YA,XB,YB,BOUND
          RETURN
          END
```

```
       SUBROUTINE  PTMOVE     TRACE                           CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE      2

       SYMBOLIC REFERENCE MAP

   ENTRY POINTS
      2  PTMOVE            2  XPTMOV          53  YPTMOV

   VARIABLES       SN  TYPE            RELOCATION
      0  A             RETURNS                                 0  BOUND       REAL                     F.P.
    141  DIF           REAL                                  142  DIF2        REAL
      0  IB            INTEGER        F.P.                     0  ITRKFG      INTEGER                 TRUNCAT
      1  S             REAL          TRUNCAT                   0  XA          REAL                     F.P.
      0  XB            REAL           F.P.                     0  YA          REAL                     F.P.
      0  YB            REAL           F.P.

   EXTERNALS            TYPE     ARGS
         ABS           REAL        1

   STATEMENT LABELS
     33  1                           41  2                                          110  5
    116  6                          133  999        FMT   NO REFS

   COMMON BLOCKS    LENGTH
         TRUNCAT        2

   STATISTICS
     PROGRAM LENGTH      143B      99
       COMMON LENGTH       2B       2
```

```
SUBROUTINE  OVERCAP   TRACE                              CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE     1
            SUBROUTINE OVERCAP(X1,Y1,X2,Y2,MORNFG)
      C   DRAWS OVER-CAPACITY LINES
      C
            COMMON /LKARYS/ HRVOL(240),DYVOL(240),IOVRCAP(240),VOL(24),TOTVOL
            COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
           +         ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
           +          ,ISIZ,CMETERS
      C
            DISTANC = SQRT( (X1-X2)**2 + (Y1-Y2)**2 )
            C = X1
            D = Y1
            T1 = C
            T2 = D
            CALL PDISP2(X1,Y1,X2,Y2)
            A = X1
            B = Y1
            ITIMES = DISTANC / EPSLON3 - 1
            DO 2 I=1,ITIMES
               CALL PDISP3(A,B,C,D)
                   IF (MORNFG .LT. 0) T1=C
                   IF (MORNFG .LT. 0) T2=D
               CALL PLOTLN(A,B,T1,T2,III) , RETURNS(2)
                   IF (MORNFG .GT. 0) T1=C
                   IF (MORNFG .GT. 0) T2=D
        2   CONTINUE
            RETURN
            END
```

```
      SUBROUTINE  OVERCAP   TRACE                              CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE       2

      SYMBOLIC REFERENCE MAP

 ENTRY POINTS
     2  OVERCAP

 VARIABLES      SN  TYPE           RELOCATION
   144  A             REAL                              145  B           REAL
   140  C             REAL                               14  CHGHT       REAL                      DRAW
    16  CMETERS       REAL          DRAW                141  D           REAL
   137  DISTANC       REAL                                0  DNBNDX      REAL                      DRAW
     2  DNBNDY        REAL          DRAW                360  DYVOL       REAL         ARRAY        LKARYS
    11  EPSLON1       REAL          DRAW                 12  EPSLON2     REAL                      DRAW
    13  EPSLON3       REAL          DRAW                  0  HRVOL       REAL         ARRAY        LKARYS
   147  I             INTEGER                             7  ICAL        INTEGER                   DRAW
   150  III           INTEGER                           740  IOVRCAP     INTEGER      ARRAY        LKARYS
    15  ISIZ          INTEGER       DRAW                146  ITIMES      INTEGER
    10  IWINDF        INTEGER       DRAW                  0  MORNFG      INTEGER                    F.P.
     4  PENX          REAL          DRAW                  5  PENY        REAL                      DRAW
     6  SCALE         REAL          DRAW               1350  TOTVOL      REAL                      LKARYS
   142  T1            REAL                              143  T2          REAL
     1  UPBNDX        REAL          DRAW                  3  UPBNDY      REAL                      DRAW
  1320  VOL           REAL     ARRAY   LKARYS             0  X1          REAL                       F.P.
     0  X2            REAL            F.P.                0  Y1          REAL                       F.P.
     0  Y2            REAL            F.P.

 EXTERNALS          TYPE    ARGS
      PDISP2                 4                              PDISP3                    4
      PLOTLN                 5                              SQRT        REAL          1

 STATEMENT LABELS
   103  2

 COMMON BLOCKS    LENGTH
      LKARYS         745
      DRAW            15

 STATISTICS
   PROGRAM LENGTH     166B       118
    COMMON LENGTH    1370B       760
```

```
      SUBROUTINE LABEL (X1,Y1,X2,Y2,IBCD,NCHAR)
      COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
     +        ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
     +        ,ISIZ,CMETERS
      COMMON /TRUNCAT/ ITRKFG,S
C
C     DISPLACE CO-ORDINATES FOR LABEL
      CALL PDISP2(X1,Y1,X2,Y2)
C
C     FIND ANGLE OF LINE
      DELY = Y2-Y1
      DELX = X2-X1
      THETA = ATAN2 (DELY,DELX) + 3.14159
C
      DIST1 = SQRT(DELX**2 + DELY**2)
      DIST2 = DIST1 / 2.0 - (NCHAR*CHGHT) / 2.0
C
      XPAGE = X2 + DIST2 * COS(THETA)
      YPAGE = Y2 + DIST2 * SIN(THETA)
C
      XXX = XPAGE + 2. * DIST2 * COS(THETA)
      YYY = YPAGE + 2. * DIST2 * SIN(THETA)
C
      CALL CHKBND(XPAGE,YPAGE,XXX,YYY) , RETURNS (8)
      IF (ITRKFG .NE. 2) GO TO 8
C
      XPAGE = (XPAGE-DNBNDX) / SCALE
      YPAGE = (YPAGE-DNBNDY) / SCALE
C
C     CONVERT TO DEGREES
      THETA = THETA * 180.0 / 3.14159
C
      HT = CHGHT / SCALE
      CALL SYMBOL (XPAGE,YPAGE,HT,IBCD,THETA,NCHAR)
C
      PENX = XXX
      PENY = YYY
C
    8 RETURN
      END
```

```
      SUBROUTINE  LABEL     TRACE                     CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE      2

      SYMBOLIC REFERENCE MAP

ENTRY POINTS
    2  LABEL

VARIABLES      SN  TYPE            RELOCATION
   14  CHGHT       REAL                DRAW          16  CMETERS     REAL                 DRAW
  161  DELX        REAL                             160  DELY        REAL
  163  DIST1       REAL                             164  DIST2       REAL
    0  DNBNDX      REAL                DRAW           2  DNBNDY      REAL                 DRAW
   11  EPSLON1     REAL                DRAW          12  EPSLON2     REAL                 DRAW
   13  EPSLON3     REAL                DRAW         171  HT          REAL
    0  IBCD        INTEGER              F.P.          7  ICAL        INTEGER              DRAW
   15  ISIZ        INTEGER             DRAW           0  ITRKFG      INTEGER              TRUNCAT
   10  IWINDF      INTEGER             DRAW           0  NCHAR       INTEGER               F.P.
    4  PENX        REAL                DRAW           5  PENY        REAL                 DRAW
    1  S           REAL                TRUNCAT        6  SCALE       REAL                 DRAW
  162  THETA       REAL                               1  UPBNDX      REAL                 DRAW
    3  UPBNDY      REAL                DRAW         165  XPAGE       REAL
  167  XXX         REAL                               0  X1          REAL                  F.P.
    0  X2          REAL                 F.P.        166  YPAGE       REAL
  170  YYY         REAL                               0  Y1          REAL                  F.P.
    0  Y2          REAL                 F.P.

EXTERNALS          TYPE    ARGS
       ATAN2       REAL      2                         CHKBND                  4
       COS         REAL      1                         PDISP2                  4
       SIN         REAL      1                         SQRT        REAL        1
       SYMBOL                6

STATEMENT LABELS
  115  8

COMMON BLOCKS    LENGTH
       DRAW          15
       TRUNCAT        2

STATISTICS
   PROGRAM LENGTH      172B      122
     COMMON LENGTH      21B       17
```

```
SUBROUTINE  ZLABEL     TRACE                        CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE      1
      SUBROUTINE ZLABEL
C
C        PRINT NAMES OF ZONES WITHIN EACH ZONE
C
      COMMON / COMM/ I,Z,L,J, K, TOD, DOW, TP, TOTATT, TTPZ,TOTGEN,ITM
     1, NYEAR,LHEAD(7),IPFLG(3),XP,YP,IOPT(6),NPLT,NCLB,NPLU
     2,NDEMVC,NNAME,FEXGEN(4),FEXAT(4),FINGEN(4),FINATT(4),TP15
      INTEGER Z,XP,YP
      COMMON /LINK/  NLINK, NLANE(240), X1(240), Y1(240),X2(240),Y2(240)
     1, LCAP(240), DIST(240), VEL(240), LCON (240,3),HEIGHT(240)
     2,NSTOPS(240)
      COMMON /ZONES/ NZONES, NZLINKS(50), ZLINKS(12,50), ZATTR(50),
     1ZGENR (50), NEXT, ZAT(2), ZGT(2), VEHTYP(6,50), ZNAME(50),FCS(50)
     2,VTYPM(7,50),FRAMIL(50,2),NEXT1,LANDU(50)
      INTEGER ZLINKS,ZNAME
      COMMON/VOLUME/ COUNT(18,240)
      COMMON /PARKZ/ PZ,   PV(50), PLA(50), VZ(50), ZV(50),PD,PLS,PLBO
     1,  PNOS(50) , PLL(50)
      INTEGER PNOS,PZ
      COMMON /RESLT/ TT(240,3),DELA(240,3),PRT(50),QUEUE(240)
      COMMON /DRAW/ DNBNDX,UPBNDX,DNBNDY,UPBNDY,PENX,PENY,SCALE,
     +        ICAL,IWINDF,EPSLON1,EPSLON2,EPSLON3,CHGHT
     +         ,ISIZ,CMETERS
C
      CH = 2 * CHGHT
      CHSC = CH / SCALE
      DO 5 IZ=NEXT1,NZONES
         IF (PNOS(IZ) .LE. 0) GO TO 5
         XSUM = 0.0
         YSUM = 0.0
         NLK = 0
         NNN = PNOS(IZ)
         DO 1 J=1,NNN
            LK = IABS( ZLINKS(J,IZ) )
            XSUM = XSUM + X1(LK) + X2(LK)
            YSUM = YSUM + Y1(LK) + Y2(LK)
    1       NLK = NLK + 2
C
C              FIND COORDINATES OF CENTER OF ZONE
         XSUM = XSUM / NLK
         YSUM = YSUM / NLK
C           CHECK LABEL WILL BE WITHIN BOUNDS
         IF (XSUM+CH .GT. UPBNDX .OR. XSUM-CH .LT. DNBNDX
     +      .OR. YSUM+CH .GT. UPBNDY .OR. YSUM .LT. DNBNDY)
     +        GO TO 5
C
C           CENTER NAME
         XPAGE = (XSUM - CH - DNBNDX) / SCALE
         YPAGE = (YSUM - DNBNDY) / SCALE
C
         CALL SYMBOL (XPAGE,YPAGE,CHSC,ZNAME(IZ),0.0,2)
C
    5 CONTINUE
C
      RETURN

      END
```

```
        SUBROUTINE  ZLABEL    TRACE                        CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.       PAGE      3

        SYMBOLIC REFERENCE MAP

ENTRY POINTS
    1  ZLABEL

VARIABLES     SN  TYPE            RELOCATION
  131  CH         REAL                                 14  CHGHT      REAL                DRAW
  132  CHSC       REAL                                 16  CMETERS    REAL                DRAW
    0  COUNT      REAL        ARRAY    VOLUME        1320  DELA       REAL        ARRAY   RESLT
 2641  DIST       REAL        ARRAY    LINK             0  DNBNDX     REAL                DRAW
    2  DNBNDY     REAL                 DRAW             6  DOW        REAL                COMM
   11  EPSLON1    REAL                 DRAW            12  EPSLON2    REAL                DRAW
   13  EPSLON3    REAL                 DRAW          2122  FCS        REAL        ARRAY   ZONES
   50  FEXAT      REAL        ARRAY    COMM            44  FEXGEN     REAL        ARRAY   COMM
   60  FINATT     REAL        ARRAY    COMM            54  FINGEN     REAL        ARRAY   COMM
 2742  FRAMIL     REAL        ARRAY    ZONES         5121  HEIGHT     REAL        ARRAY   LINK
    0  I          INTEGER              COMM             7  ICAL       INTEGER             DRAW
   31  IOPT       INTEGER     ARRAY    COMM            24  IPFLG      INTEGER     ARRAY   COMM
   15  ISIZ       INTEGER              DRAW            13  ITM        INTEGER             COMM
   10  IWINDF     INTEGER              DRAW           133  IZ         INTEGER
    3  J          INTEGER              COMM             4  K          INTEGER             COMM
    2  L          INTEGER              COMM          3107  LANDU      INTEGER     ARRAY   ZONES
 2261  LCAP       INTEGER     ARRAY    LINK          3601  LCON       INTEGER     ARRAY   LINK
   15  LHEAD      INTEGER     ARRAY    COMM           140  LK         INTEGER
   40  NCLB       INTEGER              COMM            42  NDEMVC     INTEGER             COMM
 1357  NEXT       INTEGER              ZONES         3106  NEXT1      INTEGER             ZONES
    1  NLANE      INTEGER     ARRAY    LINK             0  NLINK      INTEGER             LINK
  136  NLK        INTEGER                              43  NNAME      INTEGER             COMM
  137  NNN        INTEGER                              37  NPLT       INTEGER             COMM
   41  NPLU       INTEGER              COMM          5501  NSTOPS     INTEGER     ARRAY   LINK
   14  NYEAR      INTEGER              COMM             1  NZLINKS    INTEGER     ARRAY   ZONES
    0  NZONES     INTEGER              ZONES          311  PD         REAL                PARKZ
    4  PENX       REAL                 DRAW             5  PENY       REAL                DRAW
   63  PLA        REAL        ARRAY    PARKZ          313  PLBO       REAL                PARKZ
  376  PLL        REAL        ARRAY    PARKZ          312  PLS        REAL                PARKZ
  314  PNOS       INTEGER     ARRAY    PARKZ         2640  PRT        REAL        ARRAY   RESLT
    1  PV         REAL        ARRAY    PARKZ            0  PZ         INTEGER             PARKZ
 2722  QUEUE      REAL        ARRAY    RESLT            6  SCALE      REAL                DRAW
    5  TOD        REAL                 COMM            10  TOTATT     REAL                COMM
   12  TOTGEN     REAL                 COMM             7  TP         REAL                COMM
   64  TP15       REAL                 COMM             0  TT         REAL        ARRAY   RESLT
   11  TTPZ       REAL                 COMM             1  UPBNDX     REAL                DRAW
    3  UPBNDY     REAL                 DRAW          1364  VEHTYP     REAL        ARRAY   ZONES
 3221  VEL        REAL        ARRAY    LINK          2204  VTYPM      REAL        ARRAY   ZONES
  145  VZ         REAL        ARRAY    PARKZ           27  XP         INTEGER             COMM
  141  XPAGE      REAL                                134  XSUM       REAL
  361  X1         REAL        ARRAY    LINK          1321  X2         REAL        ARRAY   LINK
   30  YP         INTEGER              COMM           142  YPAGE      REAL
  135  YSUM       REAL                                741  Y1         REAL        ARRAY   LINK
 1701  Y2         REAL        ARRAY    LINK             1  Z          INTEGER             COMM
 1360  ZAT        REAL        ARRAY    ZONES         1213  ZATTR      REAL        ARRAY   ZONES
 1275  ZGENR      REAL        ARRAY    ZONES         1362  ZGT        REAL        ARRAY   ZONES
   63  ZLINKS     INTEGER     ARRAY    ZONES         2040  ZNAME      INTEGER     ARRAY   ZONES
  227  ZV         REAL        ARRAY    PARKZ
```

```
 EXTERNALS          TYPE   ARGS
          IABS    INTEGER     1                          SYMBOL               6

 STATEMENT LABELS
      0  1                                   111  5

 COMMON BLOCKS   LENGTH
          COMM         53
          LINK       3121
          ZONES      1657
          VOLUME     4320
          PARKZ       304
          RESLT      1730
          DRAW         15

 STATISTICS
   PROGRAM LENGTH       143B       99
     COMMON LENGTH   25700B     11200
```

```
      SUBROUTINE TOFC
*     CALL LETTER
      WRITE(6,8888)
 8888 FORMAT(1H1//56X,17HTABLE OF CONTENTS,
     1//35X,57HA. INPUT DATA
     2//35X,57H   1. INPUT LISTING
     3//35X,57HB. INITIALIZATION
     4//35X,57H   1. ZONE PARKING CAPACITIES AND TRIP LENGTHS
     5//35X,57HC. TRIP GENERATION
     6//35X,57H   1. ARRAY OF LAND USE PRODUCTIONS AND ATTRACTIONS
     7/ 35X,57H      (IPFLG(1)=1)
     8//35X,57H   2. TRIP PRODUCTIONS (PERSONS) (IPFLG(1)=1)
     9//35X,57H   3. TRIP ATTRACTIONS (PERSONS) (IPFLG(1)=1)
     0//35X,57H   4. MATRIX ASSOCIATING ZONES WITH GATES(IPFLG(1)=1)
     A//35X,57H   5. TRIP PRODUCTIONS MODIFIED BY GATE COUNTS AND SHIFT
     B/ 35X,57H      COUNTS (PERSONS)
     C//35X,57H   6. TRIP ATTRACTIONS MODIFIED BY GATE COUNTS AND SHIFT
     D/ 35X,22H      COUNTS (PERSONS))
      WRITE(6,8889)
 8889 FORMAT(//35X,20HD. TRIP DISTRIBUTION,
     1//35X,57H   1. ORIGIN TO GATE AND GATE TO DESTINATION TRIPS
     2/ 35X,57H      (IPFLG(2)>=1)
     3//35X,57H   2. ORIGIN-DESTINATION ARRAY (IPFLG(2)=1)
     4//35X,57H   3. ORIGIN-DESTINATION ARRAY FOR CIVILIAN VEHICLE TRIPS
     5/ 35X,57H      (IPFLG(2)=2)
     6//35X,57H   4. ORIGIN-DESTINATION ARRAY FOR MILITARY VEHICLE TRIPS
     7/ 35X,57H      (IPFLG(2)=4)
     8//35X,57HE. MODAL SPLIT
     9//35X,57H   1. MODAL SPLIT VEHICLE LOAD FACTORS (IPFLG(3)=1)
     A//35X,57H   2. ORIGIN TO GATE AND GATE TO DESTINATION TRIPS
     B/ 35X,18H      (IPFLG(3)=1))
      WRITE(6,8899)
 8899 FORMAT(//,35X,14HF. CALIBRATION,
     1//35X,57H   1. CALIBRATION FACTORS
     2//35X,57H   2. ORIGIN TO GATE AND GATE TO DESTINATION TRIPS
     3/ 35X,57H      (IPFLG(3)=2)
     4//35X,57HG. ASSIGNMENT
     5//35X,57H   1. ASSIGNMENT COUNTS AND ASSOCIATED COMPUTER RUN TIME
     6/ 35X,57H      (IPFLG(3)>=4)
     7//35X,57H   2. VEHICLE COUNT, TYPE AND HOT/COLD STARTS
     8/ 35X,57H      (IPFLG(3)>0)
     9//35X,57HH. TRAFFIC FLOW ANALYSIS
     A//35X,57H   1. LINK COUNTS (IPFLG(3)=0)
     B//35X,57H   2. INTERSECTION DELAYS AND QUEUEING
     C//35X,57H   3. PARKING LOT TRAVEL TIMES AND DELAYS
     D//35X,31H   4. LINK TO LINK TRAVEL TIMES)
      WRITE(6,8999)
 8999 FORMAT(//35X,10HI. SUMMARY,
     1//35X,57H   1. NETWORK SUMMARY PARAMETERS FOR TIME PERIOD
     2//35X,56HPOSSIBLE REPETITION OF A THROUGH I FOR EACH TIME PERIOD.)
      WRITE(6,9999)
 9999 FORMAT(1H-,//59X,12HINTRODUCTION,
     1//35X,57H     THE U.S. AIR FORCE THROUGH A CONTRACTURAL ARRANGEMENT
     2/ 35X,57HHAS DEVELOPED AN AIR BASE MOTOR VEHICLE MODEL THAT WILL
     3/ 35X,57HSIMULATE A BASE TRAFFIC NETWORK USING AVAILABLE LAND USE,
```

```
     4/ 35X,57HEMPLOYMENT, AND ENGINEERING DATA.  THE MODEL WILL GRAPHIC
     5     4HALLY,
     6/ 35X,57HREPRESENT AIR BASE MOTOR VEHICLE OPERATION ON VOLUME/FLOW
     7/ 35X,57HMAPS, AND WILL OUTPUT A FILE OF TRAFFIC FLOWS FOR INPUT
     8/ 35X,43HTO THE AQAM (AIR QUALITY ASSESSMENT) MODEL.1H1)
      END
```

```
      SUBROUTINE  TOFC       TRACE                          CDC 6700 FTN V3.0-355F OPT=0  79/08/17. 15.49.02.      PAGE      3

      SYMBOLIC REFERENCE MAP

  ENTRY POINTS
      1  TOFC

  FILE NAMES          MODE
      TAPE6           FMT

  STATEMENT LABELS
     22  8888    FMT                   156  8889    FMT                     266  8899    FMT
    413  8999    FMT                   433  9999    FMT

  STATISTICS
    PROGRAM LENGTH     513B      331
```

Appendix B

UTILITY ROUTINES

B.1 PROGRAM NETINT

The NETINT program (Table B.1) uses the BATS-LCON array, which indicates interconnection between links, to determine the intersections in the network. Two to four links leading into each intersection are specified. These link numbers are then arranged in the order of north, east, south, and west approaches. The x,y coordinates of each link are used to determine the direction from which each link approaches an intersection.

As input, the program reads a header card and a card indicating the number of links in the network, followed by a deck of Type 2 cards in the BATS format. The program prints an intersection number of each intersection followed by the link numbers of the north, east, south, and west approaches. The program also prints the coordinates and intersection number associated with each link.

Table B-1

PROGRAM NETINT LISTING

```
PROGRAM     NETINT    TRACE                        CDC 6700 FTN V3.0-355F OPT=0  79/08/20. 11.43.54.       PAGE        1

                PROGRAM NETINT(INPUT,OUTPUT)
        C     THIS PROGRAM READS A BATS INPUT DECK AND IDENTIFIES ALL INTERSECTIONS
        C      IMPLIED BY THE LINK CONNECTIONS --I.E. LCON ARRAY.
        *    A POSSIBLE EXTENSION TO THIS PROGRAM WOULD BE TO CHECK X-Y
        *      COORDINATES.  YOU COULD PRINT A MESSAGE WHEN THE LINK X-Y DID NOT
        *      EQUAL THE INTERSECTION X-Y.
        *      ANOTHER EXTENSION WOULD BE TO CHECK THAT FOR EACH LINK THE LCON ARRAY
        *      SPECIFIES LINKS WHICH LEAD OUT FROM ONLY ONE INTERSECTION.
        CS      ARRAYS
                DIMENSION OUT(4),IC(20),IFL(240),NWSE(4),DIR(4),INL(4)
                COMMON / LINK / NLINK, NLANE(240), DIREC(240,4), LCAP(240)
              1 ,DIST(240), VEL(240), LCON(240,3)
                INTEGER OUT
        C
                READ 90, IA,IB
         90     FORMAT(7X,7A10)
                PRINT 91 , IA,IB
         91     FORMAT(1H1,6X,7A10)
                READ 1, NLINK
          1     FORMAT (2X,I4)
                READ 2,(((DIREC(I,J),J=1,4),(LCON(I,J),J=1,3)),DIST(I),NLANE(I),
              1LCAP(I),I=1,NLINK)
          2     FORMAT(10X,4F5.0,10X,3I5,5X, F10.5, 2I5)
                DO 3 I=1,NLINK
                IF(DIST(I).EQ.0) DIST(I)=1.0
                DO 3 J=1,3,2
                DIREC(I,J+1)=DIREC(I,J+1)*DIST(I)+LCAP(I)*1000.
          3     DIREC(I,J)=DIREC(I,J)*DIST(I)+NLANE(I)*1000.
                CALL COORXY
                   DO 1000 I = 1, NLINK
                   IFL(I) = 0
       1000        CONTINUE
        C
                PRINT 5
          5     FORMAT (1H0,3X*INTERSECTION*4X*NORTH*9X*EAST*8X*SOUTH*9X*WEST*/1H
              17X*NUMBER*4(5X*APPROACH*))
                INUM = 0
                   DO 9000 I = 1, NLINK
                   IF( IFL(I) .NE. 0) GO TO 9000
        C
                      DO 2000 J = 1, 3
                IF (LCON(I,J).GT.0) GO TO 2050
       2000           CONTINUE
                   GO TO 9000
       2050        CONTINUE
        C
                   OUT(1) =0
                   OUT(2) = LCON(I,2)
                   OUT(3) = LCON(I,1)
                   OUT(4) = LCON(I,3)
        C
                IC(1) = 1
                INL(1)=1
                 DO 3000 IT = 2,4
                INL(IT)=0
```

Table B-1 (Continued)

```
PROGRAM     NETINT   TRACE                     CDC 6700 FTN V3.0-355F OPT=0  79/08/20. 11.43.54.     PAGE     2
      3000        IC(IT) = 0
     C     FIND ALL LINKS CORRESPONDING TO LING,LCON(I)
           KOUNT = 1
              DO 5000 I1 = 1,NLINK
     C      CHECK FOR SAM LINK
           IF(I.EQ.I1) GO TO 5000
                    DO 4000 J1 = 1, 3
                         IF(LCON(I1,J1) .EQ. 0) GO TO 4000
            DO 3500 K=1,4
                         IF(LCON(I1,J1) .NE. OUT(K)) GO TO 3500
                         KOUNT = KOUNT + 1
     C     STORE LINK NUMBERS RELATIVE TO GEOM. LOCATION
            IK = K+1
            IF(J1.EQ.1) IK=K+2
            IF(J1.EQ.2) IK=K+3
            IF(IK.GT.4) IK=IK-4
     C  CHECK CONSISTANT ORIENTATION OF INTERSECTION
           IF(INL(IK).EQ.0) GO TO 3105
           DO 3103 J2=2,4
           IK = J2
           IF(INL(J2).EQ.0) GO TO 3105
      3103 CONTINUE
           GO TO 3106
      3105 INL(IK)=I1
      3106 IC(KOUNT) =I1
           IF(OUT(1)   .NE.0) GO TO 3300
           DO 3200 J2=1,3
           IF(LCON(I1,J2)  .EQ.  0) GO TO 3200
           IF(LCON(I1,J2)  .NE.  OUT(2).AND.LCON(I1,J2).NE.OUT(3).AND.LCON(I1,J2)
          1 2).NE.OUT(4))OUT(1) = LCON(I1,J2)
      3200 CONTINUE
      3300 CONTINUE
                         IFL(I1) = INUM + 1
                         GO TO 5000
      3500               CONTINUE
      4000            CONTINUE
      5000        CONTINUE
           IF(KOUNT .EQ. 1) GO TO 9000
           IFL(I) = INUM + 1
      6000     CONTINUE
           IF(KOUNT.LE.4) GO TO 61
           PRINT 960,(IC(K),K=1 ,KOUNT)
       960 FORMAT(19H TO MANY APROACHES  20I5)
           GO TO 9000
        61 CONTINUE
           DO 3600 K = 1, KOUNT
           I1 = IC(K)
               YDIR = DIREC(I1,2) - DIREC(I1,4)
               XDIR = DIREC(I1,1)- DIREC(I1,3)
           IF(XDIR.EQ.0..AND.YDIR.EQ.0.) STOP 3600
          DIR(K) = YDIR/SQRT(XDIR*XDIR + YDIR*YDIR)
      3600 CONTINUE
     C
     C SORT THE DIR LARGEST TO SMALLEST
     C
```

Table B-1 (Continued)

```
PROGRAM     NETINT    TRACE                      CDC 6700 FTN V3.0-355F OPT=0  79/08/20. 11.43.54.      PAGE      3

      DO 3700 K=1,KOUNT
      NWSE(K) = K
      DO 3660 J1 = 1,K
      J1 = K-J1
      IF(J1.LE.0) GO TO 3660
      IF(DIR(J1) .GE. DIR(K)) GO TO 3700
      NWSE(J1+1) = NWSE(J1)
      NWSE(J1) = K
 3660 CONTINUE
 3700 CONTINUE
C
C     FIND NORTH MOST LINK
C  SET J1 AND INDEX TO POINT TO THE NORTH LINK IN THE INL ARRAY
C
      I1=NWSE(1)
      DO 71 IK=1,4
      J1 = IK
      IF(IC(I1) .EQ.INL(IK)) GO TO 72
   71 CONTINUE
      STOP 71
C     ORDER THE APPROACH LINKS N,W,S,E
C  CHECK IF THE NORTH MOST LEG OF A 3 LEG INT. IS EAST OR WEST.
   72 K1 = 0
      IF(DIR(I1).GT.0.7.OR. KOUNT.EQ.4) GO TO 728
C  EAST-WEST SO  ROTATE INT. BY 1 OR 3 QUADRANTS
      K1 = 3
      IF(DIREC(IC(I1),1) .GT.DIREC(IC(I1),3)) K1=1
  728  J1=J1+K1
      IF(J1.GT.4) J1=J1-4
      DO 73 K= 1,4
      IK=K+J1-1
      IF(IK.GT.4) IK=IK-4
      IC(K)= INL(IK)
   73 CONTINUE
 5900 INUM = INUM + 1
      DO 75 K=2,KOUNT
      I1 = IC(K)
      IF(I1.EQ.0) GO TO 75
      IF(DIREC(I1,3).EQ.DIREC(I ,3).AND.DIREC(I1,4).EQ.DIREC(I ,4))
     1 GO TO 75
      PRINT 9592, INUM,IC(1),IC(4),IC(3),IC(2),I1
 9592 FORMAT(1H ,5(4XI5,4X)=INTERSECTION X,Y NOT CORRECT. LINK=I5)
      GO TO 9000
   75  CONTINUE
      PRINT 5910, INUM, IC(1),IC(4),IC(3),IC(2)
 5910 FORMAT (1H ,5(4XI5,4X))
 9000    CONTINUE
   93 FORMAT (5H1LINK,5X,=UTMX1=5X=UTMY1=5X         =UTMX2=5X=UTMY2=10X,
     1  3X=ST=3X=RT=3X=LT=,5X=INTERSECTION=)
      PRINT 93
      PRINT 99,(I,(DIREC(I,J),J=1,4),(LCON(I,J),J=1,3),IFL(I),I=1,NLINK)
   99 FORMAT (1H ,I4,4F10.0,10X,3I5,I14)
      STOP
C
 9050 FORMAT(2I5)

      END
```

Appendix C

SAMPLE RUN: WILLIAMS AFB

I. Introduction

The Williams data base has been run through several different sequences using the BATS model, including runs for one 12-hour time period, for 12 one-hour time periods, for the morning peak rush hour (15 minute time periods from 7:00 A.M. to 8:00 A.M.), for the hourly period from 11:00 A.M. to 12:00 P.M., in both descriptive and predictive modes. In this section the 11:00 A.M. to 12:00 P.M. runs are discussed and briefly analyzed. A discussion of the remaining runs is not within the scope of this document.

II. Descriptive Runs

The descriptive run is entitled, "WILLIAMS AFB, 11 1300 CAL, 29 09 79," on the blocked heading. This heading is somewhat difficult to read because the PPS (Peripheral Printing System) does not overprint lines as a line printer does.

The descriptive run simulates the Williams AFB traffic network during the peak noon hour from 11:00 A.M. to 12:00 P.M. The vehicle volumes on each link look quite reasonable when compared to field data collected by the research team. Thus, the run is accepted as describing the existing situation at the base during a typical Friday noon rush period.

III. Predictive Run

A second run was made to predict what would happen if the main thoroughfares (D and E Streets) were changed from two-way to one-way streets. A plot of the link and zone network is included for reference as Figure C-1. This required changing the input data so that no links connected to any link going west on D Street or east on E Street. Thus, the change to the input data was simple and no changes were made to the intersection or zone definitions.

The predictive run simulates the Williams AFB network during the peak noon hour from 11:00 A.M. to 12:00 P.M. The implementation of one-way streets was tested to see if improved traffic flow resulted from relieving congestion or by shortening turning movement time.

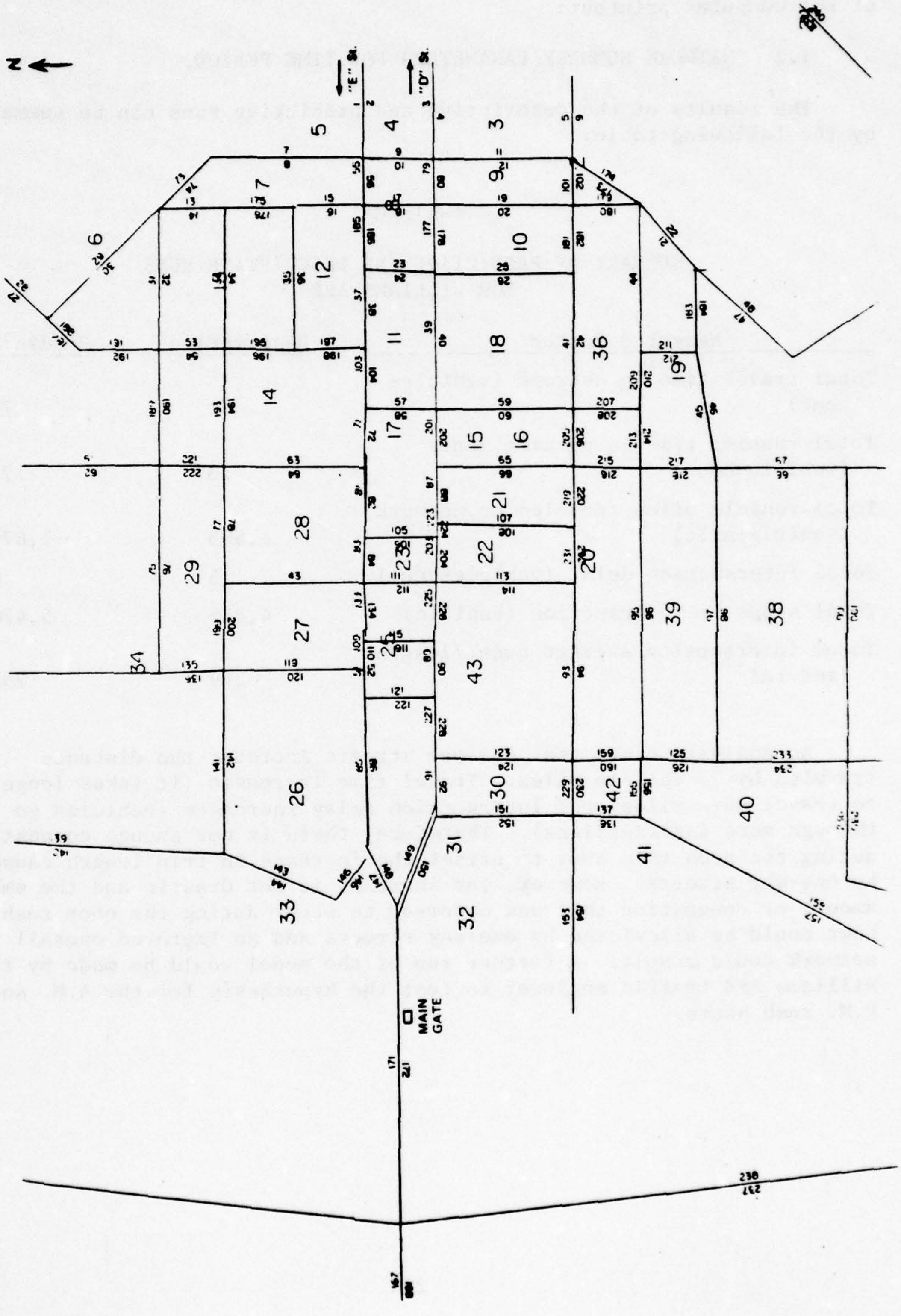


FIGURE C-1 WILLIAMS AFB LINK NETWORK

IV. Results

The most general report of network effectivenss is on the last page of the computer printout:

I.1. NETWORK SUMMARY PARAMETERS FOR TIME PERIOD.

The results of the descriptive and predictive runs can be summarized by the following table:

Table C-1

SUMMARY OF PREDICTIVE AND DESCRIPTIVE RUNS FOR WILLIAMS AFB

Measured Factor	Descriptive	Predictive
Total travel time on network (vehicle-hour)	71	75
Total running time in parking zones (vehicle-hour)	73	73
Total vehicle miles traveled on network (vehicle-mile)	1,603	1,676
Total intersection delay (vehicle-hour)	5	6
Total stops at intersection (vehicle)	4,818	5,470
Total intersection average queue/lengths (meters)	249	255

An analysis shows that one-way streets increase the distance traveled by 73 vehicle miles. Travel time increases (it takes longer to travel more miles) and intersection delay increases (vehicles go through more intersections). Therefore, there is not enough congestion during the noon rush hour to offset the increase in trip length caused by one-way streets. However, the increase is not drastic and the small amount of congestion that was observed to occur during the noon rush hour could be alleviated by one-way streets and an improved overall network could result. A further run of the model could be made by the Williams AFB traffic engineer to test the hypothesis for the A.M. and P.M. rush hours.

BATS MODEL
WILLIAMS AF
DESCRIPTIVE
29 09 78

TABLE OF CONTENTS

(IPFLG(3)>=4)

2. VEHICLE COUNT, TYPE AND HOT/COLD STARTS (IPFLG(3)>0)

H. TRAFFIC FLOW ANALYSIS

1. LINK COUNTS (IPFLG(3)=0)

2. INTERSECTION DELAYS AND QUEUEING

3. PARKING LOT TRAVEL TIMES AND DELAYS

4. LINK TO LINK TRAVEL TIMES

I. SUMMARY

1. NETWORK SUMMARY PARAMETERS FOR TIME PERIOD

POSSIBLE REPETITION OF A THROUGH I FOR EACH TIME PERIOD.

INTRODUCTION

THE U.S. AIR FORCE THROUGH A CONTRACTURAL ARRANGEMENT HAS DEVELOPED AN AIR BASE MOTOR VEHICLE MODEL THAT WILL *SIMULATE* A *BASE TRAFFIC* NETWORK USING AVAILABLE LAND USE, EMPLOYMENT, AND ENGINEERING DATA. THE MODEL WILL GRAPHICALLY REPRESENT AIR BASE MOTOR VEHICLE OPERATION ON VOLUME/FLOW MAPS, AND WILL OUTPUT A FILE OF TRAFFIC FLOWS FOR INPUT TO THE AQAM (AIR QUALITY ASSESSMENT) MODEL.1

A.1. INPUT LISTING: OF EACH DATA CARD - WITH MODIFICATIONS MADE BY SUBROUTINE INPT.

```
78/ 9/29      WILLIAMS AFB         11-1300  CALIBRATE
1 240  62  50  50   9   1  -0   1   2   0******00. 6.3600.  -0.  -0.133*1*91377
2  1     1*644.*358.*778.*358.   -0  25.   55    7   10  -0.   3.04785323.2*29.5
2  2     1*644.*358.*778.*358.   -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2  3     1*641.*245.*778.*245.   -0  25.   79    9   12  -0.   3.04785323.2*29.5
2  4     1*641.*245.*778.*245.   -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2  5     1*638.*023.*775.*023.   -0  25.  101   11  173  -0.   3.04785323.2*29.5
2  6     1*638.*023.*775.*023.   -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2  7     1*644.*358.*647.*602.   -0  25.   73   -0   -0  -0.   3.04785323.2*29.5
2  8     1*644.*358.*647.*602.   -0  25.   10   55    2  -0.   3.04785323.2*29.5
2  9     1*641.*245.*644.*358.   -0  25.    7    2   55  -0.   3.04785323.2*29.5
2 10     1*641.*245.*644.*358.   -0  25.   12   79    4  -0.   3.04785323.2*29.5
2 11     1*641.*245.*641.*026.   -0  25.    9    4   79  -0.   3.04785323.2*29.5
2 12     1*641.*245.*641.*026.   -0  25.  173  101    6  -0.   3.04785323.2*29.5
2 13     1*564.*687.*564.*580.   -0  25.   29   74   31  -0.   3.04785323.2*29.5
2 14     1*564.*687.*564.*580.   -0  25.  176   33   -0  -0.   3.04785323.2*29.5
2 15     1*568.*358.*568.*465.   -0  25.  175   -0   35  -0.   3.04785323.2*29.5
2 16     1*568.*358.*568.*465.   -0  25.   18  185   56  -0.   3.04785323.2*29.5
2 17     1*568.*245.*568.*358.   -0  25.   15   56  185  -0.   3.04785323.2*29.5
2 18     1*568.*245.*568.*358.   -0  25.   20  177   80  -0.   3.04785323.2*29.5
2 19     1*568.*245.*564.*023.   -0  25.   17   80  177  -0.   3.04785323.2*29.5
2 20     1*568.*245.*564.*023.   -0  25.  180  181  102  -0.   3.04785323.2*29.5
2 21     1*568.*916.*464.*828.   -0  25.   47  183   -0  -0.   3.04785323.2*29.5
2 22     1*568.*916.*464.*828.   -0  25.  179  174   44  -0.   3.04785323.2*29.5
2 23     1*464.*358.*458.*245.   -0  25.   -0  186   37  -0.   3.04785323.2*29.5
2 24     1*464.*358.*458.*245.   -0  25.   26   39  178  -0.   3.04785323.2*29.5
2 25     1*455.*245.*455.*026.   -0  25.   23  178   39  -0.   3.04785323.2*29.5
2 26     1*455.*245.*455.*026.   -0  25.   -0   41  182  -0.   3.04785323.2*29.5
2 27     1*479.*964.*388.*870.   -0  25.  187   -0   30  -0.   3.04785323.2*29.5
2 28     1*479.*964.*388.*870.   -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2 29     1*564.*687.*388.*870.   -0  25.   -0   28  187  -0.   3.04785323.2*29.5
2 30     1*564.*687.*388.*870.   -0  25.   14   31   74  -0.   3.04785323.2*29.5
2 31     1*564.*687.*336.*690.   -0  25.  189  191   54  -0.   3.04785323.2*29.5
2 32     1*564.*687.*336.*690.   -0  25.   74   14   29  -0.   3.04785323.2*29.5
2 33     1*564.*580.*336.*583.   -0  25.  193   53  196  -0.   3.04785323.2*29.5
2 34     1*564.*580.*336.*583.   -0  25.   -0  176   13  -0.   3.04785323.2*29.5
2 35     1*568.*471.*333.*471.   -0  25.   -0  195  198  -0.   3.04785323.2*29.5
2 36     1*568.*471.*333.*471.   -0  25.   -0   16  175  -0.   3.04785323.2*29.5
2 37     1*464.*358.*336.*358.   -0  25.  103  197   -0  -0.   3.04785323.2*29.5
2 38     1*464.*358.*336.*358.   -0  25.  186   24   -0  -0.   3.04785323.2*29.5
2 39     1*458.*245.*235.*245.   -0  25.  201   57   60  -0.   3.04785323.2*29.5
2 40     1*458.*245.*235.*245.   -0  25.  178   26   23  -0.   3.04785323.2*29.5
2 41     1*452.*023.*235.*026.   -0  25.  205   59  208  -0.   3.04785323.2*29.5
2 42     1*452.*023.*235.*026.   -0  25.  182   -0   25  -0.   3.04785323.2*29.5
2 43     1*955.*586.*955.*361.   -0  25.   -0   78  199  -0.   3.04785323.2*29.5
2 44     1*568.*916.*327.*916.   -0  25.  209   -0  212  -0.   3.04785323.2*29.5
2 45     1*327.*828.*138.*797.   -0  25.   -0  217   68  -0.   3.04785323.2*29.5
2 46     1*327.*828.*138.*797.   -0  25.  184   -0  211  -0.   3.04785323.2*29.5
2 47     1*464.*828.*318.*672.   -0  25.   -0   -0   50  -0.   3.04785323.2*29.5
2 48     1*464.*828.*318.*672.   -0  25.   22   -0  183  -0.   3.04785323.2*29.5
2 49     1*318.*672.*543.*325.   -0  25.   -0   48   -0  -0.   3.04785323.2*29.5
2 50     1*318.*672.*543.*325.   -0  25.   -0   -0  240  -0.   3.04785323.2*29.5
2 51     1*769.*364.*815.*364.   -0  25.   85   -0  122  -0.   3.04785323.2*29.5
2 52     1*769.*364.*815.*364.   -0  25.  110   -0  119  -0.   3.04785323.2*29.5
2 53     1*336.*690.*336.*583.   -0  25.  191   32  189  -0.   3.04785323.2*29.5
2 54     1*336.*690.*336.*583.   -0  25.  196  193   34  -0.   3.04785323.2*29.5
2 55     1*644.*358.*568.*338.   -0  25.  185   15   18  -0.   3.04785323.2*29.5
2 56     1*644.*358.*568.*358.   -0  25.    2   10    7  -0.   3.04785323.2*29.5
2 57     1*238.*358.*235.*245.   -0  25.   -0  104   71  -0.   3.04785323.2*29.5
```

2 58	1*238.*358.*235.*245.	-0	25.	60	201	40	-0.	3.04785323.2*29.5
2 59	1*235.*245.*235.*026.	-0	25.	57	40	201	-0.	3.04785323.2*29.5
2 60	1*235.*245.*235.*026.	-0	25.	208	205	42	-0.	3.04785323.2*29.5
2 61	1*147.*913.*147.*690.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 62	1*147.*913.*147.*690.	-0	25.	222	75	190	-0.	3.04785323.2*29.5
2 63	1*144.*586.*141.*361.	-0	25.	221	194	77	-0.	3.04785323.2*29.5
2 64	1*144.*586.*141.*361.	-0	25.	-0	81	72	-0.	3.04785323.2*29.5
2 65	1*141.*245.*141.*026.	-0	25.	-0	202	87	-0.	3.04785323.2*29.5
2 66	1*141.*245.*141.*026.	-0	25.	216	219	206	-0.	3.04785323.2*29.5
2 67	1*138.*797.*138.*587.	-0	25.	217	46	-0	-0.	3.04785323.2*29.5
2 68	1*138.*797.*138.*587.	-0	25.	70	99	-0	-0.	3.04785323.2*29.5
2 69	1*138.*587.*138.*203.	-0	25.	67	-0	99	-0.	3.04785323.2*29.5
2 70	1*138.*587.*138.*203.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 71	1*244.*358.*141.*361.	-0	25.	81	63	-0	-0.	3.04785323.2*29.5
2 72	1*244.*358.*141.*361.	-0	25.	104	58	-0	-0.	3.04785323.2*29.5
2 73	1*564.*687.*647.*602.	-0	25.	31	29	14	-0.	3.04785323.2*29.5
2 74	1*564.*687.*647.*602.	-0	25.	8	-0	-0	-0.	3.04785323.2*29.5
2 75	1*147.*690.*812.*693.	-0	25.	-0	117	136	-0.	3.04785323.2*29.5
2 76	1*147.*690.*812.*693.	-0	25.	190	222	61	-0.	3.04785323.2*29.5
2 77	1*955.*586.*144.*586.	-0	25.	199	-0	-0	-0.	3.04785323.2*29.5
2 78	1*955.*586.*144.*586.	-0	25.	194	64	221	-0.	3.04785323.2*29.5
2 79	1*641.*245.*568.*245.	-0	25.	177	17	20	-0.	3.04785323.2*29.5
2 80	1*641.*245.*568.*245.	-0	25.	4	12	9	-0.	3.04785323.2*29.5
2 81	1*141.*358.*028.*361.	-0	25.	83	-0	106	-0.	3.04785323.2*29.5
2 82	1*141.*361.*028.*361.	-0	25.	72	-0	63	-0.	3.04785323.2*29.5
2 83	1*028.*361.*955.*364.	-0	25.	133	43	112	-0.	3.04785323.2*29.5
2 84	1*028.*361.*955.*364.	-0	25.	82	106	-0	-0.	3.04785323.2*29.5
2 85	1*769.*364.*510.*361.	-0	25.	147	145	-0	-0.	3.04785323.2*29.5
2 86	1*769.*364.*510.*361.	-0	25.	52	122	-0	-0.	3.04785323.2*29.5
2 87	1*049.*245.*141.*245.	-0	25.	223	-0	108	-0.	3.04785323.2*29.5
2 88	1*049.*245.*141.*245.	-0	25.	202	66	-0	-0.	3.04785323.2*29.5
2 89	1*860.*251.*769.*251.	-0	25.	227	121	-0	-0.	3.04785323.2*29.5
2 90	1*860.*251.*769.*251.	-0	25.	226	-0	115	-0.	3.04785323.2*29.5
2 91	1*671.*251.*577.*251.	-0	25.	149	-0	152	-0.	3.04785323.2*29.5
2 92	1*671.*251.*577.*251.	-0	25.	228	124	-0	-0.	3.04785323.2*29.5
2 93	1*952.*026.*665.*032.	-0	25.	229	123	160	-0.	3.04785323.2*29.5
2 94	1*952.*026.*665.*032.	-0	25.	232	-0	113	-0.	3.04785323.2*29.5
2 95	1*138.*919.*668.*919.	-0	25.	155	159	126	-0.	3.04785323.2*29.5
2 96	1*138.*919.*668.*919.	-0	25.	214	218	215	-0.	3.04785323.2*29.5
2 97	1*138.*797.*662.*800.	-0	25.	-0	125	234	-0.	3.04785323.2*29.5
2 98	1*138.*797.*662.*800.	-0	25.	46	68	217	-0.	3.04785323.2*29.5
2 99	1*662.*590.*138.*587.	-0	25.	236	233	128	-0.	3.04785323.2*29.5
2100	1*662.*590.*138.*587.	-0	25.	-0	70	67	-0.	3.04785323.2*29.5
2101	1*638.*023.*564.*023.	-0	25.	181	19	180	-0.	3.04785323.2*29.5
2102	1*638.*023.*564.*023.	-0	25.	6	173	11	-0.	3.04785323.2*29.5
2103	1*244.*358.*336.*358.	-0	25.	71	-0	58	-0.	3.04785323.2*29.5
2104	1*244.*358.*336.*358.	-0	25.	38	-0	197	-0.	3.04785323.2*29.5
2105	1*028.*361.*028.*245.	-0	25.	-0	82	83	-0.	3.04785323.2*29.5
2106	1*028.*361.*028.*245.	-0	25.	-0	203	224	-0.	3.04785323.2*29.5
2107	1*049.*245.*043.*026.	-0	25.	-0	88	223	-0.	3.04785323.2*29.5
2108	1*049.*245.*043.*026.	-0	25.	-0	231	220	-0.	3.04785323.2*29.5
2109	1*815.*364.*860.*364.	-0	25.	51	119	-0	-0.	3.04785323.2*29.5
2110	1*815.*364.*860.*364.	-0	25.	134	116	-0	-0.	3.04785323.2*29.5
2111	1*955.*364.*955.*248.	-0	25.	43	84	133	-0.	3.04785323.2*29.5
2112	1*955.*364.*955.*248.	-0	25.	114	225	204	-0.	3.04785323.2*29.5
2113	1*955.*248.*952.*026.	-0	25.	111	204	225	-0.	3.04785323.2*29.5
2114	1*955.*248.*952.*026.	-0	25.	-0	93	232	-0.	3.04785323.2*29.5
2115	1*860.*251.*860.*364.	-0	25.	-0	134	109	-0.	3.04785323.2*29.5
2116	1*860.*251.*860.*364.	-0	25.	-0	89	226	-0.	3.04785323.2*29.5
2117	1*812.*693.*818.*867.	-0	25.	-0	164	-0	-0.	3.04785323.2*29.5
2118	1*812.*693.*818.*867.	-0	25.	136	-0	76	-0.	3.04785323.2*29.5

2119	1*815.*590.*815.*364.	-0	25.	135	200	141	-0.	3.04785323.2*29.5
2120	1*815.*590.*815.*364.	-0	25.	-0	51	110	-0.	3.04785323.2*29.5
2121	1*769.*361.*769.*251.	-0	25.	-0	52	85	-0.	3.04785323.2*29.5
2122	1*769.*361.*769.*251.	-0	25.	-0	227	90	-0.	3.04785323.2*29.5
2123	1*665.*032.*671.*251.	-0	25.	-0	228	91	-0.	3.04785323.2*29.5
2124	1*665.*032.*671.*251.	-0	25.	160	229	94	-0.	3.04785323.2*29.5
2125	1*668.*922.*662.*800.	-0	25.	159	96	155	-0.	3.04785323.2*29.5
2126	1*668.*922.*662.*800.	-0	25.	234	-0	98	-0.	3.04785323.2*29.5
2127	1*662.*590.*668.*422.	-0	25.	233	100	236	-0.	3.04785323.2*29.5
2128	1*662.*590.*668.*422.	-0	25.	-0	129	-0	-0.	3.04785323.2*29.5
2129	1*668.*422.*559.*361.	-0	25.	130	-0	-0	-0.	3.04785323.2*29.5
2130	1*559.*361.*565.*187.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2131	1*769.*364.*668.*422.	-0	25.	129	127	-0	-0.	3.04785323.2*29.5
2132	1*769.*364.*769.*178.	-0	25.	-0	-0	131	-0.	3.04785323.2*29.5
2133	1*955.*364.*860.*361.	-0	25.	109	-0	116	-0.	3.04785323.2*29.5
2134	1*955.*364.*860.*361.	-0	25.	84	112	43	-0.	3.04785323.2*29.5
2135	1*812.*693.*815.*590.	-0	25.	117	76	-0	-0.	3.04785323.2*29.5
2136	1*812.*693.*815.*590.	-0	25.	120	141	200	-0.	3.04785323.2*29.5
2137	1*574.*925.*577.*032.	-0	25.	151	230	153	-0.	3.04785323.2*29.5
2138	1*574.*925.*577.*032.	-0	25.	-0	157	156	-0.	3.04785323.2*29.5
2139	1*519.*593.*550.*123.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2140	1*519.*593.*550.*123.	-0	25.	144	-0	142	-0.	3.04785323.2*29.5
2141	1*815.*590.*519.*593.	-0	25.	-0	139	144	-0.	3.04785323.2*29.5
2142	1*815.*590.*519.*593.	-0	25.	200	120	135	-0.	3.04785323.2*29.5
2143	1*443.*413.*519.*593.	-0	25.	139	142	-0	-0.	3.04785323.2*29.5
2144	1*443.*413.*519.*593.	-0	25.	-0	-0	146	-0.	3.04785323.2*29.5
2145	1*510.*364.*443.*413.	-0	25.	-0	143	-0	-0.	3.04785323.2*29.5
2146	1*510.*364.*443.*413.	-0	25.	-0	147	86	-0.	3.04785323.2*29.5
2147	1*412.*315.*510.*364.	-0	25.	171	-0	150	-0.	3.04785323.2*29.5
2148	1*412.*315.*510.*364.	-0	25.	86	-0	-0	-0.	3.04785323.2*29.5
2149	1*577.*251.*412.*315.	-0	25.	171	148	-0	-0.	3.04785323.2*29.5
2150	1*577.*251.*412.*315.	-0	25.	92	152	-0	-0.	3.04785323.2*29.5
2151	1*577.*032.*577.*251.	-0	25.	-0	92	149	-0.	3.04785323.2*29.5
2152	1*577.*032.*577.*251.	-0	25.	138	153	230	-0.	3.04785323.2*29.5
2153	1*577.*032.*257.*035.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2154	1*577.*032.*257.*035.	-0	25.	230	138	151	-0.	3.04785323.2*29.5
2155	1*668.*922.*574.*925.	-0	25.	157	137	-0	-0.	3.04785323.2*29.5
2156	1*668.*922.*574.*925.	-0	25.	96	126	159	-0.	3.04785323.2*29.5
2157	1*574.*925.*269.*361.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2158	1*574.*925.*269.*361.	-0	25.	156	-0	137	-0.	3.04785323.2*29.5
2159	1*668.*922.*665.*032.	-0	25.	123	94	229	-0.	3.04785323.2*29.5
2160	1*668.*922.*665.*032.	-0	25.	126	155	96	-0.	3.04785323.2*29.5
2161	1*470.*593.*361.*151.	-0	25.	-0	235	-0	-0.	3.04785323.2*29.5
2162	1*470.*593.*361.*151.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2163	1*818.*867.*186.*867.	-0	25.	-0	-0	118	-0.	3.04785323.2*29.5
2164	1*818.*867.*186.*867.	-0	25.	166	-0	-0	-0.	3.04785323.2*29.5
2165	1*186.*867.*557.*519.	-0	25.	163	-0	-0	-0.	3.04785323.2*29.5
2166	1*186.*867.*557.*519.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2167	2*916.*315.*696.*312.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2168	2*916.*315.*696.*312.	-0	25.	172	237	170	-0.	3.04785323.2*29.5
2169	2*916.*315.*105.*906.	-0	25.	237	167	172	-0.	3.04785323.2*29.5
2170	2*916.*315.*105.*906.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2171	2*916.*315.*412.*315.	-0	25.	167	170	237	-0.	3.04785323.2*29.5
2172	2*916.*315.*412.*315.	-0	25.	150	-0	148	-0.	3.04785323.2*29.5
2173	1*638.*023.*568.*916.	-0	25.	44	179	21	-0.	3.04785323.2*29.5
2174	1*638.*023.*568.*916.	-0	25.	11	6	101	-0.	3.04785323.2*29.5
2175	1*564.*580.*564.*468.	-0	25.	13	-0	33	-0.	3.04785323.2*29.5
2176	1*564.*580.*564.*468.	-0	25.	16	35	-0	-0.	3.04785323.2*29.5
2177	1*568.*245.*455.*245.	-0	25.	39	23	26	-0.	3.04785323.2*29.5
2178	1*568.*245.*455.*245.	-0	25.	80	20	17	-0.	3.04785323.2*29.5
2179	1*568.*916.*564.*023.	-0	25.	19	102	181	-0.	3.04785323.2*29.5

2180	1*568.*916.*564.*023.	-0	25.	21	44	-0	-0.	3.04785323.2*29.5
2181	1*564.*023.*452.*023.	-0	25.	41	25	-0	-0.	3.04785323.2*29.5
2182	1*564.*023.*452.*023.	-0	25.	102	180	19	-0.	3.04785323.2*29.5
2183	1*464.*828.*327.*828.	-0	5.	45	211	-0	-0.	3.04785323.2*29.5
2184	1*464.*828.*327.*828.	-0	5.	-0	47	22	-0.	3.04785323.2*29.5
2185	1*568.*358.*464.*358.	-0	25.	37	-0	24	-0.	3.04785323.2*29.5
2186	1*568.*358.*464.*358.	-0	25.	56	18	15	-0.	3.04785323.2*29.5
2187	1*388.*870.*336.*818.	-0	25.	-0	-0	192	-0.	3.04785323.2*29.5
2188	1*388.*870.*336.*818.	-0	25.	28	30	-0	-0.	3.04785323.2*29.5
2189	1*336.*690.*147.*690.	-0	25.	75	61	222	-0.	3.04785323.2*29.5
2190	1*336.*690.*147.*690.	-0	25.	32	54	191	-0.	3.04785323.2*29.5
2191	1*336.*818.*336.*690.	-0	25.	-0	188	-0	-0.	3.04785323.2*29.5
2192	1*336.*818.*336.*690.	-0	25.	54	189	32	-0.	3.04785323.2*29.5
2193	1*336.*583.*144.*586.	-0	25.	77	221	64	-0.	3.04785323.2*29.5
2194	1*336.*583.*144.*586.	-0	25.	34	196	53	-0.	3.04785323.2*29.5
2195	1*336.*583.*333.*471.	-0	25.	53	34	193	-0.	3.04785323.2*29.5
2196	1*336.*583.*333.*471.	-0	25.	198	-0	36	-0.	3.04785323.2*29.5
2197	1*333.*471.*336.*358.	-0	25.	195	36	-0	-0.	3.04785323.2*29.5
2198	1*333.*471.*336.*358.	-0	25.	-0	103	38	-0.	3.04785323.2*29.5
2199	1*955.*586.*815.*590.	-0	25.	141	135	120	-0.	3.04785323.2*29.5
2200	1*955.*586.*815.*590.	-0	25.	78	-0	-0	-0.	3.04785323.2*29.5
2201	1*141.*245.*235.*245.	-0	25.	87	-0	66	-0.	3.04785323.2*29.5
2202	1*141.*245.*235.*245.	-0	25.	40	60	57	-0.	3.04785323.2*29.5
2203	1*028.*245.*955.*248.	-0	25.	225	111	114	-0.	3.04785323.2*29.5
2204	1*028.*245.*955.*248.	-0	25.	224	-0	105	-0.	3.04785323.2*29.5
2205	1*235.*026.*141.*026.	-0	25.	219	65	216	-0.	3.04785323.2*29.5
2206	1*235.*026.*141.*026.	-0	25.	42	208	59	-0.	3.04785323.2*29.5
2207	1*235.*026.*235.*919.	-0	25.	59	42	205	-0.	3.04785323.2*29.5
2208	1*235.*026.*235.*919.	-0	25.	-0	213	210	-0.	3.04785323.2*29.5
2209	1*327.*916.*235.*919.	-0	25.	213	207	-0	-0.	3.04785323.2*29.5
2210	1*327.*916.*235.*919.	-0	25.	-0	212	-0	-0.	3.04785323.2*29.5
2211	1*327.*916.*327.*828.	-0	25.	-0	-0	209	-0.	3.04785323.2*29.5
2212	1*327.*916.*327.*828.	-0	25.	-0	45	184	-0.	3.04785323.2*29.5
2213	1*235.*919.*138.*919.	-0	25.	95	215	218	-0.	3.04785323.2*29.5
2214	1*235.*919.*138.*919.	-0	25.	210	-0	207	-0.	3.04785323.2*29.5
2215	1*138.*919.*141.*026.	-0	25.	65	206	219	-0.	3.04785323.2*29.5
2216	1*138.*919.*141.*026.	-0	25.	218	95	214	-0.	3.04785323.2*29.5
2217	1*138.*919.*138.*797.	-0	25.	215	214	95	-0.	3.04785323.2*29.5
2218	1*138.*919.*138.*797.	-0	25.	68	97	46	-0.	3.04785323.2*29.5
2219	1*141.*026.*043.*026.	-0	25.	231	107	-0	-0.	3.04785323.2*29.5
2220	1*141.*026.*043.*026.	-0	25.	206	216	65	-0.	3.04785323.2*29.5
2221	1*147.*690.*144.*586.	-0	25.	61	190	75	-0.	3.04785323.2*29.5
2222	1*147.*690.*144.*586.	-0	25.	64	77	194	-0.	3.04785323.2*29.5
2223	1*028.*245.*049.*245.	-0	25.	203	105	-0	-0.	3.04785323.2*29.5
2224	1*028.*245.*049.*245.	-0	25.	88	108	-0	-0.	3.04785323.2*29.5
2225	1*955.*248.*860.*251.	-0	25.	89	115	-0	-0.	3.04785323.2*29.5
2226	1*955.*248.*860.*251.	-0	25.	204	114	111	-0.	3.04785323.2*29.5
2227	1*769.*251.*671.*251.	-0	25.	91	-0	124	-0.	3.04785323.2*29.5
2228	1*769.*251.*671.*251.	-0	25.	90	-0	121	-0.	3.04785323.2*29.5
2229	1*665.*032.*577.*032.	-0	25.	153	151	138	-0.	3.04785323.2*29.5
2230	1*665.*032.*577.*032.	-0	25.	94	160	123	-0.	3.04785323.2*29.5
2231	1*952.*026.*043.*026.	-0	25.	93	113	-0	-0.	3.04785323.2*29.5
2232	1*952.*026.*043.*026.	-0	25.	220	-0	107	-0.	3.04785323.2*29.5
2233	1*662.*800.*662.*590.	-0	25.	125	98	-0	-0.	3.04785323.2*29.5
2234	1*662.*800.*662.*590.	-0	25.	128	236	100	-0.	3.04785323.2*29.5
2235	1*662.*590.*470.*593.	-0	25.	100	128	233	-0.	3.04785323.2*29.5
2236	1*662.*590.*470.*593.	-0	25.	-0	-0	162	-0.	3.04785323.2*29.5
2237	1*916.*315.*041.*187.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2238	1*916.*315.*041.*187.	-0	25.	170	172	167	-0.	3.04785323.2*29.5
2239	1*543.*325.*195.*940.	-0	25.	-0	49	-0	-0.	3.04785323.2*29.5
2240	1*543.*325.*195.*940.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5

3	1	8	1	9	56	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	2	10	3	11	80	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	3	12	5	174	102	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	4	30	73	13	32	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	5	14	-0	175	34	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	6	176	-0	15	36	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	7	16	55	17	186	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	8	18	79	19	178	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	9	20	101	179	182	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	10	21	-0	48	184	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	11	180	173	22	44	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	12	-0	185	23	38	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	13	24	177	25	40	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	14	26	181	-0	42	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	15	27	-0	29	188	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	16	192	31	53	190	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	17	54	33	195	194	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	18	196	35	197	-0	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	19	198	37	-0	104	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	20	58	39	59	202	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	21	60	41	207	206	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	22	-0	77	43	200	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	23	-0	44	211	210	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	24	218	45	67	98	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	25	212	183	-0	46	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	26	239	-0	-0	50	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	27	-0	51	121	86	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	28	120	109	-0	52	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	29	-0	103	57	72	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	30	62	189	221	76	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	31	222	193	63	78	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	32	64	71	-0	82	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	33	-0	201	65	88	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	34	66	205	215	220	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	35	68	-0	69	100	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	36	118	75	135	-0	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	37	-0	81	105	84	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
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3	40	-0	87	107	224	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	41	122	89	-0	228	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	42	116	225	-0	90	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	43	-0	91	151	150	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	44	-0	227	123	92	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	45	124	93	159	230	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	46	114	231	-0	94	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	47	160	95	125	156	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
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3	58	-0	155	138	158	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
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3	60	147	149	-0	172	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	61	169	171	238	168	2	90	13.	13.	-0.	-0.	3.	2400.	2400.	-0.	-0.

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5 27116.  -0.    80.     23.     -0.     -0.     -0.     -0.     -0.     -0. -0. 22187.
5 37157.  -0.   340.    312.     -0.     -0.     -0.     -0.     -0.     -0. -0. 15833.
5 47170.  -0.    48.     12.     -0.     -0.     -0.     -0.     -0.     -0. -0.  8378.
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7     171  172 371. 366.  -0.  -0.  -0.  -0.  -0.  -0.  -0.  -0.
9 1.28 1.28 1.28 1.28 1.00 1.00 1.28 1.28 1.28 1.28 1.00 1.00-0.00 600.
10 14 5171149151229 93231219205207209 44 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0
10 14 5172150152230 94232220206 42182 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0
T1=   3.771     T2=  11.931     T2-T1=    8.160
```

B. INITIALIZATION WILLIAMS AFB 11-1300 CALIBRATE

B.1. ZONE PARKING CAPACITIES AND TRIP LENGTHS

ZONE	CAPACITY	LENGTH	TRAVEL TIME	ALTERNATE TRAVEL TIME
MS	-0.	1603.	1440.	1800.
CH	-0.	223.	760.	760.
PH	-0.	1604.	2376.	2970.
TM	-0.	1603.	2080.	2340.
GL	-0.	222.	648.	648.
OT	-0.	1604.	2952.	2952.
1	88.	227.	36.	36.
2	116.	165.	26.	26.
3	157.	243.	38.	38.
4	170.	179.	28.	28.
5	75.	254.	40.	40.
6	288.	292.	46.	46.
7	102.	258.	40.	40.
8	30.	122.	19.	19.
9	120.	241.	38.	38.
10	57.	231.	36.	36.
11	70.	233.	36.	36.
12	51.	242.	38.	38.
13	178.	260.	41.	41.
14	126.	244.	38.	38.
15	80.	232.	36.	36.
16	38.	225.	35.	35.
17	81.	137.	21.	21.
18	306.	268.	42.	42.
19	20.	244.	38.	38.
20	586.	511.	80.	80.
21	186.	248.	39.	39.
22	166.	251.	39.	39.
23	85.	140.	22.	22.
24	195.	904.	141.	141.
25	82.	139.	22.	22.
26	350.	335.	52.	52.
27	165.	250.	39.	39.
28	64.	235.	37.	37.
29	217.	357.	56.	56.
30	29.	224.	35.	35.
31	186.	248.	39.	39.
32	92.	503.	79.	79.
33	50.	534.	83.	83.
34	300.	550.	86.	86.
35	592.	462.	72.	72.
36	9.	242.	38.	38.
37	600.	518.	81.	81.
38	200.	490.	76.	76.
39	72.	481.	75.	75.
40	70.	645.	101.	101.
41	300.	657.	103.	103.
42	72.	142.	22.	22.
43	613.	358.	56.	56.
44	50.	1923.	301.	301.

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO 1200. HOURS

C.1. ARRAY OF LAND USE PRODUCTIONS AND ATTRACTIONS

FROM/TO	HOME	INDS	SHOP	SERV	EXTN	ADMN	FLTL
HOME	175.	7.	95.	354.	150.	13.	88.
INDS	8.	3.	13.	74.	5.	4.	13.
SHOP	65.	9.	59.	157.	87.	21.	62.
SERV	142.	30.	101.	246.	150.	39.	49.
EXTN	119.	4.	69.	186.	0.	7.	19.
ADMN	13.	4.	31.	96.	9.	1.	35.
FLTL	86.	12.	92.	123.	24.	33.	12.

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO 1200. HOURS

C.2. TRIP PRODUCTIONS (PERSONS)

FROM ZONE	USE	PURPOSE HOME-W	SHOPPI	SERVIC	EXTERN	INDUST	ADMINI	FLT.LI	HOME	MILITA	TOTAL
MS	EXTN	6	16	44	0	1	2	4	28	0	101
CH	EXTN	3	9	25	0	1	1	3	16	0	58
PH	EXTN	1	2	5	0	0	0	1	3	0	12
TM	EXTN	1	3	8	0	0	0	1	5	0	18
GL	EXTN	0	1	3	0	0	0	0	2	0	6
OT	EXTN	1	38	102	0	2	4	10	65	57	279
1	FLTL	0	7	9	2	1	3	1	7	9	39
2	FLTL	0	6	8	2	1	2	1	6	7	33
3	FLTL	0	25	34	7	3	9	3	24	5	110
4	FLTL	0	3	4	1	0	1	0	3	3	15
5	FLTL	0	21	29	6	3	8	3	20	25	115
6	FLTL	0	13	18	3	2	5	2	12	12	67
7	INDS	0	0	3	0	0	0	0	0	2	5
8	INDS	0	0	1	0	0	0	0	0	0	1
9	INDS	0	0	2	0	0	0	0	0	2	4
10	INDS	0	1	4	0	0	0	1	0	0	6
11	SERV	0	0	0	0	0	0	0	0	0	0
12	SERV	0	3	8	5	1	1	2	5	0	25
13	INDS	0	1	5	0	0	0	1	1	1	9
14	SERV	0	5	12	7	1	2	2	7	1	37
15	ADMN	1	8	26	2	1	0	9	3	4	54
16	ADMN	0	2	6	1	0	0	2	1	0	12
17	ADMN	0	6	18	2	1	0	7	2	0	36
18	SERV	0	11	28	17	3	4	6	16	0	85
19	INDS	0	1	5	0	0	0	1	0	27	34
20	INDS	0	2	12	1	0	1	2	1	42	61
21	SERV	0	30	74	45	9	12	15	42	37	264
22	HOME	2	22	83	35	2	3	21	41	0	209
23	SHOP	0	4	11	6	1	1	4	4	0	31
24	FLTL	0	16	21	4	2	6	2	15	5	71
25	ADMN	0	12	36	3	1	1	13	5	3	74
26	SERV	0	29	71	43	9	11	14	41	17	235
27	SERV	0	11	26	16	3	4	5	15	3	83
28	SERV	0	1	2	1	0	0	0	1	3	8
29	HOME	1	54	200	85	4	7	50	99	2	502
30	ADMN	0	3	10	1	0	0	4	1	2	21
31	SERV	0	6	14	8	2	2	3	8	0	43
32	SERV	0	0	1	1	0	0	0	1	1	4
33	SERV	0	3	7	4	1	1	1	4	0	21
34	HOME	1	5	19	8	0	1	5	9	0	48
35	INDS	0	2	13	1	0	1	2	1	123	143
36	INDS	0	4	24	2	1	1	4	3	3	42
37	HOME	1	8	31	13	1	1	8	15	0	78
38	HOME	0	2	9	4	0	0	2	4	0	21
39	INDS	0	0	1	0	0	0	0	0	7	8
40	SERV	0	2	5	3	1	1	1	3	0	16
41	HOME	0	3	13	5	0	0	3	6	0	30
42	INDS	0	1	3	0	0	0	1	0	14	19
43	SHOP	0	55	147	81	8	19	58	60	8	436
44	INDS	0	0	2	0	0	0	0	0	3	5
TOTAL		18	457	1242	425	66	115	278	605	428	3634

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO 1200. HOURS

C.3. TRIP ATTRACTIONS (PERSONS)

TO ZONE	USE	PURPOSE HOME-W	SHOPPI	SERVIC	EXTERN	INDUST	ADMINI	FLT.LI	HOME	MILITA	TOTAL
MS	EXTN	1	0	0	199	0	0	0	0	0	200
CH	EXTN	0	0	0	115	0	0	0	0	0	115
PH	EXTN	0	0	0	23	0	0	0	0	0	23
TM	EXTN	0	0	0	36	0	0	0	0	0	36
GL	EXTN	0	0	0	13	0	0	0	0	0	13
OT	EXTN	0	0	0	39	0	0	0	0	57	96
1	FLTL	0	0	0	0	0	0	32	0	9	41
2	FLTL	0	0	0	0	0	0	27	0	7	34
3	FLTL	3	0	0	0	0	0	112	0	5	120
4	FLTL	0	0	0	0	0	0	13	0	3	16
5	FLTL	1	0	0	0	0	0	96	0	25	122
6	FLTL	1	0	0	0	0	0	59	0	12	72
7	INDS	0	0	0	0	4	0	0	0	2	6
8	INDS	0	0	0	0	1	0	0	0	0	1
9	INDS	0	0	0	0	3	0	0	0	2	5
10	INDS	0	0	0	0	7	0	0	0	0	7
11	SERV	0	0	0	0	0	0	0	0	0	0
12	SERV	0	0	72	0	0	0	0	0	0	72
13	INDS	1	0	0	0	7	0	0	0	1	9
14	SERV	0	0	90	0	0	0	0	0	1	91
15	ADMN	0	0	0	0	0	49	0	0	4	53
16	ADMN	0	0	0	0	0	11	0	0	0	11
17	ADMN	0	0	0	0	0	35	0	0	0	35
18	SERV	0	0	334	0	0	0	0	0	0	334
19	INDS	0	0	0	0	7	0	0	0	27	34
20	INDS	2	0	0	0	19	0	0	0	42	63
21	SERV	0	0	256	0	0	0	0	0	37	293
22	HOME	0	0	0	0	0	0	0	142	0	142
23	SHOP	0	60	0	0	0	0	0	0	0	60
24	FLTL	3	0	0	0	0	0	71	0	5	79
25	ADMN	0	0	0	0	0	69	0	0	3	72
26	SERV	1	0	73	0	0	0	0	0	17	91
27	SERV	0	0	216	0	0	0	0	0	3	219
28	SERV	0	0	0	0	0	0	0	0	3	3
29	HOME	0	0	0	0	0	0	0	343	2	345
30	ADMN	0	0	0	0	0	20	0	0	2	22
31	SERV	0	0	126	0	0	0	0	0	0	126
32	SERV	0	0	0	0	0	0	0	0	1	1
33	SERV	0	0	70	0	0	0	0	0	0	70
34	HOME	0	0	0	0	0	0	0	32	0	32
35	INDS	0	0	0	0	19	0	0	0	123	142
36	INDS	1	0	0	0	35	0	0	0	3	39
37	HOME	0	0	0	0	0	0	0	53	0	53
38	HOME	0	0	0	0	0	0	0	15	0	15
39	INDS	0	0	0	0	2	0	0	0	7	9
40	SERV	0	0	0	0	0	0	0	0	0	0
41	HOME	0	0	0	0	0	0	0	22	0	22
42	INDS	0	0	0	0	5	0	0	0	14	19
43	SHOP	1	399	0	0	0	0	0	0	8	408
44	INDS	0	0	0	0	2	0	0	0	3	5
TOTAL		15	459	1237	425	111	184	410	607	428	3876

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO 1200. HOURS

C.5. TRIP PRODUCTIONS MODIFIED BY GATE COUNTS AND SHIFT COUNTS (PERSONS)

FROM		PURPOSE									
ZONE	USE	HOME-W	SHOPPI	SERVIC	EXTERN	INDUST	ADMINI	FLT.LI	HOME	MILITA	TOTAL
MS	EXTN	6	16	44	0	1	2	4	28	0	101
CH	EXTN	3	9	25	0	1	1	3	16	0	58
PH	EXTN	1	2	5	0	0	0	1	3	0	12
TM	EXTN	1	3	8	0	0	0	1	5	0	18
GL	EXTN	0	1	3	0	0	0	0	2	0	6
OT	EXTN	1	38	102	0	2	4	10	65	57	279
1	FLTL	0	7	9	2	1	3	1	7	9	39
2	FLTL	0	6	8	2	1	2	1	6	7	33
3	FLTL	0	25	34	7	3	9	3	24	5	110
4	FLTL	0	3	4	1	0	1	0	3	3	15
5	FLTL	0	21	29	6	3	8	3	20	25	115
6	FLTL	0	13	18	3	2	5	2	12	12	67
7	INDS	0	0	3	0	0	0	0	0	2	5
8	INDS	0	0	1	0	0	0	0	0	0	1
9	INDS	0	0	2	0	0	0	0	0	2	4
10	INDS	0	1	4	0	0	0	1	0	0	6
11	SERV	0	0	0	0	0	0	0	0	0	0
12	SERV	0	3	8	5	1	1	2	5	0	25
13	INDS	0	1	5	0	0	0	1	1	1	9
14	SERV	0	5	12	7	1	2	2	7	1	37
15	ADMN	1	8	26	2	1	0	9	3	4	54
16	ADMN	0	2	6	1	0	0	2	1	0	12
17	ADMN	0	6	18	2	1	0	7	2	0	36
18	SERV	0	11	28	17	3	4	6	16	0	85
19	INDS	0	1	5	0	0	0	1	0	27	34
20	INDS	0	2	12	1	0	1	2	1	42	61
21	SERV	0	30	74	45	9	12	15	42	37	264
22	HOME	2	22	83	35	2	3	21	41	0	209
23	SHOP	0	4	11	6	1	1	4	4	0	31
24	FLTL	0	16	21	4	2	6	2	15	5	71
25	ADMN	0	12	36	3	1	1	13	5	3	74
26	SERV	0	29	71	43	9	11	14	41	17	235
27	SERV	0	11	26	16	3	4	5	15	3	83
28	SERV	0	1	2	1	0	0	0	1	3	8
29	HOME	1	54	200	85	4	7	50	99	2	502
30	ADMN	0	3	10	1	0	0	4	1	2	21
31	SERV	0	6	14	8	2	2	3	8	0	43
32	SERV	0	0	1	1	0	0	0	1	1	4
33	SERV	0	3	7	4	1	1	1	4	0	21
34	HOME	1	5	19	8	0	1	5	9	0	48
35	INDS	0	2	13	1	0	1	2	1	123	143
36	INDS	0	4	24	2	1	1	4	3	3	42
37	HOME	1	8	31	13	1	1	8	15	0	78
38	HOME	0	2	9	4	0	0	2	4	0	21
39	INDS	0	0	1	0	0	0	0	0	7	8
40	SERV	0	2	5	3	1	1	1	3	0	16
41	HOME	0	3	13	5	0	0	3	6	0	30
42	INDS	0	1	3	0	0	0	1	0	14	19
43	SHOP	0	55	147	81	8	19	58	60	8	436
44	INDS	0	0	2	0	0	0	0	0	3	5
TOTAL		18	457	1242	425	66	115	278	605	428	3634

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO 1200. HOURS

C.6. TRIP ATTRACTIONS MODIFIED BY GATE COUNTS AND SHIFT COUNTS (PERSONS)

TO		PURPOSE									
ZONE	USE	HOME-W	SHOPPI	SERVIC	EXTERN	INDUST	ADMINI	FLT.LI	HOME	MILITA	TOTAL
MS	EXTN	1	0	0	199	0	0	0	0	0	200
CH	EXTN	0	0	0	115	0	0	0	0	0	115
PH	EXTN	0	0	0	23	0	0	0	0	0	23
TM	EXTN	0	0	0	36	0	0	0	0	0	36
GL	EXTN	0	0	0	13	0	0	0	0	0	13
OT	EXTN	0	0	0	39	0	0	0	0	57	96
1	FLTL	0	0	0	0	0	0	32	0	9	41
2	FLTL	0	0	0	0	0	0	27	0	7	34
3	FLTL	3	0	0	0	0	0	112	0	5	120
4	FLTL	0	0	0	0	0	0	13	0	3	16
5	FLTL	1	0	0	0	0	0	96	0	25	122
6	FLTL	1	0	0	0	0	0	59	0	12	72
7	INDS	0	0	0	0	4	0	0	0	2	6
8	INDS	0	0	0	0	1	0	0	0	0	1
9	INDS	0	0	0	0	3	0	0	0	2	5
10	INDS	0	0	0	0	7	0	0	0	0	7
11	SERV	0	0	0	0	0	0	0	0	0	0
12	SERV	0	0	72	0	0	0	0	0	0	72
13	INDS	1	0	0	0	7	0	0	0	1	9
14	SERV	0	0	90	0	0	0	0	0	1	91
15	ADMN	0	0	0	0	0	49	0	0	4	53
16	ADMN	0	0	0	0	0	11	0	0	0	11
17	ADMN	0	0	0	0	0	35	0	0	0	35
18	SERV	0	0	334	0	0	0	0	0	0	334
19	INDS	0	0	0	0	7	0	0	0	27	34
20	INDS	2	0	0	0	19	0	0	0	42	63
21	SERV	0	0	256	0	0	0	0	0	37	293
22	HOME	0	0	0	0	0	0	0	142	0	142
23	SHOP	0	60	0	0	0	0	0	0	0	60
24	FLTL	3	0	0	0	0	0	71	0	5	79
25	ADMN	0	0	0	0	0	69	0	0	3	72
26	SERV	1	0	73	0	0	0	0	0	17	91
27	SERV	0	0	216	0	0	0	0	0	3	219
28	SERV	0	0	0	0	0	0	0	0	3	3
29	HOME	0	0	0	0	0	0	0	343	2	345
30	ADMN	0	0	0	0	0	20	0	0	2	22
31	SERV	0	0	126	0	0	0	0	0	0	126
32	SERV	0	0	0	0	0	0	0	0	1	1
33	SERV	0	0	70	0	0	0	0	0	0	70
34	HOME	0	0	0	0	0	0	0	32	0	32
35	INDS	0	0	0	0	19	0	0	0	123	142
36	INDS	1	0	0	0	35	0	0	0	3	39
37	HOME	0	0	0	0	0	0	0	53	0	53
38	HOME	0	0	0	0	0	0	0	15	0	15
39	INDS	0	0	0	0	2	0	0	0	7	9
40	SERV	0	0	0	0	0	0	0	0	0	0
41	HOME	0	0	0	0	0	0	0	22	0	22
42	INDS	0	0	0	0	5	0	0	0	14	19
43	SHOP	1	399	0	0	0	0	0	0	8	408
44	INDS	0	0	0	0	2	0	0	0	3	5
TOTAL		15	459	1237	425	111	184	410	607	428	3876

AD-A079 555 SRI INTERNATIONAL MENLO PARK CA F/G 15/5
USER GUIDE FOR THE AIR FORCE BASE AUTOMOTIVE TRANSPORTATION SIM--ETC(U)
SEP 79 R SANDYS F08635-76-D-0132
UNCLASSIFIED AFESC/ESL-TR-79-16-VOL-2 NL

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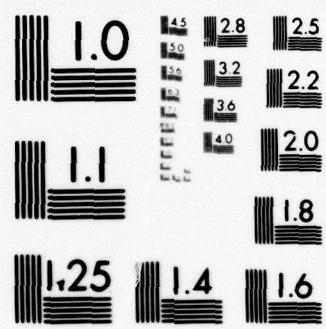

MICROCOPY RESOLUTION TEST CHART

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO1200. HOURS

D.1. ORIGIN TO GATE (OG) AND GATE TO DESTINATION (GD) TRIPS (PERSONS)

ZONE	OG1	GD1	OG2	GD2	GG
MS	101.	200.	0.	0.	
CH	58.	115.	0.	0.	
FM	12.	23.	0.	0.	
TM	18.	36.	0.	0.	
GL	6.	13.	0.	0.	
OT	279.	96.	0.	0.	
1	3.	3.	36.	39.	
2	3.	2.	30.	32.	
3	8.	9.	102.	111.	
4	1.	1.	14.	15.	
5	10.	9.	105.	113.	
6	5.	5.	62.	66.	
7	0.	0.	5.	6.	
8	0.	0.	1.	1.	
9	0.	0.	4.	5.	
10	0.	0.	6.	7.	
11	0.	0.	0.	0.	
12	5.	11.	20.	61.	
13	0.	1.	9.	8.	
14	7.	14.	30.	77.	
15	3.	2.	51.	50.	
16	1.	0.	11.	11.	
17	2.	1.	34.	34.	
18	17.	50.	68.	264.	
19	4.	4.	30.	30.	
20	7.	9.	54.	54.	
21	51.	44.	213.	248.	
22	35.	28.	174.	114.	
23	6.	9.	25.	51.	
24	5	7.	66.	72.	
25	3.	3.	71.	69.	
26	46.	15.	189.	76.	
27	16.	33.	67.	186.	
28	1.	0.	7.	3.	
29	85.	68.	417.	278.	
30	1.	1.	20.	21.	
31	8.	19.	35.	107.	
32	1.	0.	3.	1.	
33	4.	11.	17.	59.	
34	8	6.	40.	26.	
35	20	20.	123.	122.	
36	2	3.	40.	37.	
37	13.	10.	65.	43.	
38	4.	3.	17.	12.	
39	1.	1.	7.	8.	
40	3.	0.	13.	0.	
41	5.	4.	25.	18.	
42	2.	2.	17.	17.	
43	82.	62.	354.	346.	
44	0.	1.	5.	5.	

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO1200. HOURS

D.2. ORIGIN - DESTINATION ARRAY (PERSONS)

ORG/DEST. ZONES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	1	0	1	2	1	1	3	2	1	0	1	1	2	0	4	0	1	0	1	0	3	0	1	0	0	0	0	0	6
2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	1	3	1	1	0	1	0	1	0	3	0	1	0	0	0	2	0	1	0	0	0	0	0	5
3	0	0	1	0	1	0	0	0	0	0	0	2	0	2	2	1	2	9	0	1	7	6	3	1	3	2	6	0	14	1	3	0	2	1	2	1	2	1	0	0	1	0	22
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	3
5	1	0	1	0	2	1	0	0	0	0	0	2	0	2	2	0	2	8	2	3	8	5	3	1	3	3	5	0	11	1	3	0	2	1	8	1	2	0	0	0	1	1	18
6	0	0	1	0	1	0	0	0	0	0	0	1	0	1	1	0	1	5	1	1	5	3	2	0	2	1	3	0	7	1	2	0	1	1	3	1	1	0	0	0	0	0	11
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	2	1	0	0	0	0	1	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	3
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
14	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	0	3	0	0	2	2	1	0	1	1	2	0	4	0	1	0	1	0	0	0	1	0	0	0	0	0	4
15	1	1	2	0	2	1	0	0	0	0	0	2	0	2	0	0	0	7	0	0	5	1	1	2	0	2	5	0	2	0	3	0	1	0	1	0	0	0	0	0	0	0	7
16	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
17	1	0	2	0	2	1	0	0	0	0	0	1	0	1	0	0	0	5	0	0	4	0	1	1	0	1	3	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	5
18	0	0	2	0	1	1	0	0	0	0	0	2	0	2	1	0	1	8	0	1	6	4	1	1	1	2	5	0	9	0	3	0	2	1	1	1	1	0	0	0	1	0	10
19	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	1	2	3	3	0	0	0	0	1	1	0	0	0	1	0	0	0	8	0	0	0	0	0	0	1	2
20	1	1	1	0	2	1	0	0	0	0	0	1	0	1	0	0	0	3	3	4	6	0	0	0	0	3	2	0	1	0	1	0	1	0	12	0	0	0	1	0	0	1	3
21	2	2	4	0	6	3	0	0	0	1	0	4	1	5	3	1	2	20	3	6	18	10	4	3	4	5	13	0	24	1	8	0	4	2	12	3	4	1	1	0	2	1	27
22	2	1	6	1	5	3	0	0	0	0	0	5	0	6	1	0	1	22	0	0	17	10	3	4	1	5	14	0	23	0	8	0	5	2	0	1	4	1	0	0	2	0	19
23	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	1	1	1	0	1	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	3
24	0	0	1	0	0	0	0	0	0	0	0	1	0	2	2	0	1	6	0	0	4	4	2	0	2	1	4	0	8	1	2	0	1	1	1	1	1	0	0	0	1	0	14
25	1	1	4	0	3	2	0	0	0	0	0	2	0	3	0	0	0	10	0	0	7	1	2	2	0	2	6	0	3	0	4	0	2	0	1	0	0	0	0	0	0	0	10
26	1	1	4	0	4	2	0	0	0	1	0	4	1	5	3	1	2	19	2	4	16	10	4	2	4	5	12	0	23	1	7	0	4	2	7	3	4	1	0	0	2	1	25
27	0	0	1	0	1	1	0	0	0	0	0	2	0	2	1	0	1	7	0	1	5	4	1	1	1	2	5	0	8	0	3	0	1	1	2	1	1	0	0	0	1	0	10
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
29	4	3	14	2	12	7	0	0	0	0	0	12	0	14	2	0	1	54	0	1	41	23	7	9	3	12	35	0	56	1	20	0	11	5	2	1	9	2	0	0	4	0	47
30	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	0	0	1	0	1	2	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	3
31	0	0	1	0	1	0	0	0	0	0	0	1	0	1	1	0	0	4	0	0	3	2	1	1	1	1	2	0	5	0	1	0	1	0	0	1	1	0	0	0	0	0	5
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	1	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
34	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	5	0	0	4	2	1	1	0	1	3	0	5	0	2	0	1	0	0	0	1	0	0	0	0	0	4
35	3	2	2	1	7	3	1	0	1	0	0	1	0	1	1	0	0	4	8	12	13	0	0	1	1	6	3	1	2	1	1	0	1	0	34	1	0	0	2	0	0	4	4
36	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	0	0	5	1	1	1	0	1	4	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	3
37	1	1	2	0	2	1	0	0	0	0	0	2	0	2	0	0	0	8	0	0	6	4	1	1	0	2	5	0	8	0	3	0	2	1	0	0	1	0	0	0	1	0	7
38	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	0	2	1	0	0	0	1	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	2
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
41	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	4	0	0	3	1	0	1	0	1	2	0	3	0	1	0	1	0	0	0	1	0	0	0	0	0	3
42	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	0	0	0	0	1	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1
43	5	4	16	2	14	8	0	0	0	1	0	9	1	11	5	1	4	40	2	2	31	14	7	10	7	9	26	0	34	2	15	0	8	3	3	3	5	1	0	0	2	0	48
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
MS	1	0	2	0	2	1	0	0	0	0	0	2	0	3	1	0	0	11	1	2	9	6	2	1	1	3	7	0	14	0	4	0	2	1	4	1	2	1	0	0	1	0	13
CH	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	1	1	5	3	1	1	0	2	4	0	8	0	2	0	1	1	2	0	1	0	0	0	1	0	8
PH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
TM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	2	1	0	0	0	1	1	0	3	0	1	0	0	0	1	0	0	0	0	0	0	0	2
GL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
OT	2	1	5	1	5	3	0	0	0	0	0	6	1	8	1	0	1	30	3	5	26	16	5	4	2	9	19	0	40	1	11	0	6	4	12	2	6	2	1	0	3	1	37

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO1200. HOURS

ORIGIN-DESTINATION ARRAY (CONTINUED)

ORG/DEST. ZONES

	44	MS	CH	PH	TM	GL	OT
1	0	1	1	0	0	0	1
2	0	1	1	0	0	0	1
3	0	3	2	0	1	0	2
4	0	1	0	0	0	0	0
5	0	4	2	0	1	0	2
6	0	2	1	0	0	0	1
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	2	1	0	0	0	1
13	0	0	0	0	0	0	0
14	0	3	2	0	1	0	1
15	0	1	1	0	0	0	1
16	0	0	0	0	0	0	0
17	0	1	0	0	0	0	0
18	0	7	4	1	1	0	3
19	0	2	1	0	0	0	1
20	0	3	2	0	1	0	1
21	0	21	12	2	4	1	10
22	0	15	8	2	3	1	7
23	0	2	1	0	0	0	1
24	0	2	1	0	0	0	1
25	0	1	1	0	0	0	1
26	0	19	11	2	3	1	9
27	0	7	4	1	1	0	3
28	0	1	0	0	0	0	0
29	0	35	20	4	6	2	17
30	0	1	0	0	0	0	0
31	0	3	2	0	1	0	2
32	0	0	0	0	0	0	0
33	0	2	1	0	0	0	1
34	0	3	2	0	1	0	2
35	1	8	5	1	1	1	4
36	0	1	1	0	0	0	0
37	0	5	3	1	1	0	3
38	0	2	1	0	0	0	1
39	0	0	0	0	0	0	0
40	0	1	1	0	0	0	1
41	0	2	1	0	0	0	1
42	0	1	1	0	0	0	0
43	0	34	20	4	6	2	16
44	0	0	0	0	0	0	0
MS	0	0	0	0	0	0	0
CH	0	0	0	0	0	0	0
PH	0	0	0	0	0	0	0
TM	0	0	0	0	0	0	0
GL	0	0	0	0	0	0	0
OT	0	0	0	0	0	0	0

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO1200. HOURS

D.3. ORIGIN-DESTINATION ARRAY FOR CIVILIAN VEHICLE TRIPS (PERSONS)

ORG/DEST. ZONES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	2	0	0	2	2	1	0	1	1	2	0	4	0	1	0	1	0	0	0	1	0	0	0	0	0	6
2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	2	1	1	0	1	0	1	0	3	0	1	0	0	0	0	0	1	0	0	0	0	0	5
3	0	0	1	0	1	0	0	0	0	0	0	2	0	2	2	1	2	9	0	1	7	6	3	1	3	2	6	0	14	1	3	0	2	1	1	1	2	1	0	0	1	0	22
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5	0	0	1	0	1	0	0	0	0	0	0	2	0	2	2	0	2	8	0	1	6	5	3	1	3	2	5	0	11	1	3	0	2	1	1	1	2	0	0	0	1	0	18
6	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	5	0	0	4	3	2	0	2	1	3	0	7	1	2	0	1	1	0	1	1	0	0	0	0	0	11
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	2	1	0	0	0	0	1	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	3
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
14	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	0	3	0	0	2	2	1	0	1	1	2	0	4	0	1	0	1	0	0	0	1	0	0	0	0	0	4
15	1	1	2	0	2	1	0	0	0	0	0	2	0	2	0	0	0	7	0	0	5	1	1	2	0	2	5	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	7
16	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
17	1	0	2	0	2	1	0	0	0	0	0	1	0	1	0	0	0	5	0	0	4	0	1	1	0	1	3	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	5
18	0	0	2	0	1	1	0	0	0	0	0	2	0	2	1	0	1	8	0	1	6	4	1	1	1	2	5	0	9	0	3	0	2	1	1	1	1	0	0	0	1	0	10
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
20	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	0	0	0	0	1	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	2
21	1	1	4	0	4	2	0	0	0	1	0	4	1	5	3	1	2	20	1	2	15	10	4	3	4	4	13	0	24	1	8	0	4	2	2	3	4	1	0	0	2	0	26
22	2	1	6	1	5	3	0	0	0	0	0	5	0	6	1	0	1	22	0	0	17	10	3	4	1	5	14	0	23	0	8	0	5	2	0	1	4	1	0	0	2	0	19
23	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	1	1	1	0	1	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	3
24	0	0	1	0	0	0	0	0	0	0	0	1	0	2	2	0	1	6	0	0	4	4	2	0	2	1	4	0	8	1	2	0	1	1	0	1	1	0	0	0	1	0	14
25	1	1	4	0	3	2	0	0	0	0	0	2	0	3	0	0	0	10	0	0	7	1	2	2	0	2	6	0	3	0	4	0	2	0	0	0	0	0	0	0	0	0	10
26	1	1	4	0	3	2	0	0	0	1	0	4	1	5	3	1	2	19	1	2	15	10	4	2	4	4	12	0	23	1	7	0	4	2	2	3	4	1	0	0	2	0	25
27	0	0	1	0	1	1	0	0	0	0	0	2	0	2	1	0	1	7	0	1	5	4	1	1	1	2	5	0	8	0	3	0	1	1	1	1	1	0	0	0	1	0	10
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
29	4	3	14	2	12	7	0	0	0	0	0	12	0	14	2	0	1	54	0	1	41	23	7	9	3	12	35	0	56	1	20	0	11	5	1	1	9	2	0	0	4	0	47
30	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	0	0	1	0	1	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	3
31	0	0	1	0	1	0	0	0	0	0	0	1	0	1	1	0	0	4	0	0	3	2	1	1	1	1	2	0	5	0	1	0	1	0	0	1	1	0	0	0	0	0	5
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	1	1	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
34	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	5	0	0	4	2	1	1	0	1	3	0	5	0	2	0	1	0	0	0	1	0	0	0	0	0	4
35	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	4	0	0	3	0	0	0	0	1	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	2
36	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	0	0	5	1	1	1	0	1	4	0	2	0	2	0	1	0	0	0	0	0	0	0	0	0	3
37	1	1	2	0	2	1	0	0	0	0	0	2	0	2	0	0	0	8	0	0	6	4	1	1	0	2	5	0	8	0	3	0	2	1	0	0	1	0	0	0	1	0	7
38	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	0	2	1	0	0	0	1	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	2
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
41	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	4	0	0	3	1	0	1	0	1	2	0	3	0	1	0	1	0	0	0	1	0	0	0	0	0	3
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
43	5	4	16	2	14	8	0	0	0	1	0	9	1	11	5	1	4	40	1	1	30	14	7	10	7	9	26	0	34	2	15	0	8	3	1	3	5	1	0	0	2	0	48
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MS	1	0	2	0	2	1	0	0	0	0	0	2	0	3	1	0	0	11	1	2	9	6	2	1	1	3	7	0	14	0	4	0	2	1	4	1	2	1	0	0	1	0	13
CH	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	1	1	5	3	1	1	0	2	4	0	8	0	2	0	1	1	2	0	1	0	0	0	1	0	8
PH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
TM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	2	1	0	0	0	1	1	0	3	0	1	0	0	0	1	0	0	0	0	0	0	0	2
GL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
OT	1	1	4	0	4	3	0	0	0	0	0	5	1	6	1	0	1	24	2	4	21	13	4	3	1	7	16	0	32	1	9	0	5	3	9	1	5	1	1	0	2	1	29

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO1200. HOURS

ORIGIN-DESTINATION ARRAY (CONTINUED)

ORG/DEST. ZONES

	44	MS	CH	PH	TM	GL	OT
1	0	1	1	0	0	0	0
2	0	1	1	0	0	0	0
3	0	3	2	0	1	0	1
4	0	1	0	0	0	0	0
5	0	4	2	0	1	0	1
6	0	2	1	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	2	1	0	0	0	0
13	0	0	0	0	0	0	0
14	0	3	2	0	1	0	1
15	0	1	1	0	0	0	0
16	0	0	0	0	0	0	0
17	0	1	0	0	0	0	0
18	0	7	4	1	1	0	1
19	0	2	1	0	0	0	0
20	0	3	2	0	1	0	1
21	0	21	12	2	4	1	4
22	0	15	8	2	3	1	3
23	0	2	1	0	0	0	0
24	0	2	1	0	0	0	0
25	0	1	1	0	0	0	0
26	0	19	11	2	3	1	4
27	0	7	4	1	1	0	1
28	0	1	0	0	0	0	0
29	0	35	20	4	6	2	7
30	0	1	0	0	0	0	0
31	0	3	2	0	1	0	1
32	0	0	0	0	0	0	0
33	0	2	1	0	0	0	0
34	0	3	2	0	1	0	1
35	0	8	5	1	1	1	2
36	0	1	1	0	0	0	0
37	0	5	3	1	1	0	1
38	0	2	1	0	0	0	0
39	0	0	0	0	0	0	0
40	0	1	1	0	0	0	0
41	0	2	1	0	0	0	0
42	0	1	1	0	0	0	0
43	0	34	20	4	6	2	7
44	0	0	0	0	0	0	0
MS	0	0	0	0	0	0	0
CH	0	0	0	0	0	0	0
PH	0	0	0	0	0	0	0
TM	0	0	0	0	0	0	0
GL	0	0	0	0	0	0	0
OT	0	0	0	0	0	0	0

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO1200. HOURS

D.4. ORIGIN-DESTINATION ARRAY FOR MILITARY VEHICLE TRIPS (PERSONS)

ORG/DEST. ZONES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
5	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	0	1	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	1	0
6	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2	0	0	0	0	1	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	1	1
20	1	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	4	4	0	0	0	0	2	0	0	0	0	0	0	0	0	12	0	0	0	1	0	0	1	1
21	1	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	2	4	3	0	0	0	0	1	0	0	0	0	0	0	0	0	10	0	0	0	1	0	0	1	1
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
26	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	1	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	3	2	1	1	7	3	1	0	1	0	0	0	0	0	1	0	0	0	8	12	10	0	0	1	1	5	1	1	1	1	0	0	0	0	34	1	0	0	2	0	0	4	2
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
MS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OT	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	1	1	5	3	1	1	0	2	4	0	8	0	2	0	1	1	2	0	1	0	0	0	1	0	7

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO1200. HOURS

ORIGIN-DESTINATION ARRAY (CONTINUED)

ORG/DEST. ZONES

	44	MS	CH	PH	TM	GL	OT
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	1
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	1
6	0	0	0	0	0	0	1
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	1
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	1
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	2
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	1
21	0	0	0	0	0	0	6
22	0	0	0	0	0	0	4
23	0	0	0	0	0	0	1
24	0	0	0	0	0	0	1
25	0	0	0	0	0	0	0
26	0	0	0	0	0	0	5
27	0	0	0	0	0	0	2
28	0	0	0	0	0	0	0
29	0	0	0	0	0	0	10
30	0	0	0	0	0	0	0
31	0	0	0	0	0	0	1
32	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0
34	0	0	0	0	0	0	1
35	1	0	0	0	0	0	2
36	0	0	0	0	0	0	0
37	0	0	0	0	0	0	2
38	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0
41	0	0	0	0	0	0	1
42	0	0	0	0	0	0	0
43	0	0	0	0	0	0	10
44	0	0	0	0	0	0	0
MS	0	0	0	0	0	0	0
CH	0	0	0	0	0	0	0
PH	0	0	0	0	0	0	0
TM	0	0	0	0	0	0	0
GL	0	0	0	0	0	0	0
OT	0	0	0	0	0	0	0

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO1200. HOURS

E.1. MODAL SPLIT - VEHICLE LOAD FACTORS

ZONE	PERSONS PER VEHICLE	PERSONS PER MIL. VEHICLE	CIVILIAN VEH TRIPS ORG-GATE	CIVILIAN VEH TRIPS GATE-DEST	MILITARY VEH TRIPS ORG-GATE	MILITARY VEH TRIPS GATE-DEST	PERCENT MOTOR VEHICLES	PERCENT MILITARY VEHICLES	PERSON TRIPS FROM ORIGIN	PERSON TRIPS TO DEST.
MS	1.26936	1.25228	79.57	157.56	0.00	0.00	99.300	90.300	101.000	200.000
CH	1.26936	1.25228	45.69	90.60	0.00	0.00	99.300	90.300	58.000	115.000
PH	1.26936	1.25228	9.45	18.12	0.00	0.00	99.300	90.300	12.000	23.000
TM	1.26936	1.25228	14.18	28.36	0.00	0.00	99.300	90.300	18.000	36.000
GL	1.26936	1.25228	4.73	10.24	0.00	0.00	99.300	90.300	6.000	13.000
OT	1.26936	1.25228	174.89	30.72	45.52	45.52	99.300	90.300	279.000	96.000
1	1.25760	1.28000	24.36	26.46	6.84	6.71	103.000	100.000	39.383	41.866
2	1.26320	1.28000	20.95	22.08	5.17	5.03	100.000	100.000	33.075	34.327
3	1.26320	1.28000	83.49	91.21	3.36	3.37	100.000	100.000	109.768	119.530
4	1.27160	1.28000	9.55	10.11	2.59	2.51	101.000	100.000	15.461	16.063
5	1.26040	1.28000	72.89	78.90	17.94	17.73	101.000	100.000	114.841	122.147
6	1.22960	1.25200	45.59	49.29	8.61	8.64	85.000	100.000	68.844	71.435
7	1.26320	1.24360	2.52	3.40	1.71	1.73	100.000	100.000	5.307	6.451
8	1.24920	1.24360	.80	.83	0.00	0.00	93.000	100.000	1.000	1.036
9	1.24080	1.28000	1.74	2.62	1.68	1.69	88.000	100.000	4.307	5.415
10	1.27160	1.24360	4.72	5.70	0.00	0.00	100.000	100.000	6.000	7.252
11	1.25480	1.28000	0.00	0.00	0.00	0.00	100.000	100.000	0.000	0.000
12	1.22960	1.24360	20.33	58.46	0.00	0.00	100.000	100.000	25.000	71.884
13	1.27160	1.28000	6.40	6.37	.79	.90	100.000	100.000	9.154	9.263
14	1.28000	1.24360	28.06	69.98	1.00	.95	100.000	100.000	37.154	90.759
15	1.22120	1.28000	41.45	40.39	2.47	2.46	85.000	100.000	53.781	52.479
16	1.26320	1.24360	9.50	9.04	0.00	0.00	100.000	100.000	12.000	11.418
17	1.28000	1.24360	28.13	27.60	0.00	0.00	100.000	100.000	36.000	35.332
18	1.27440	1.24360	66.70	262.47	0.00	0.00	100.000	100.000	85.000	334.492
19	1.24920	1.19040	6.38	6.43	21.99	22.16	93.000	98.000	34.148	34.401
20	1.23800	1.24640	16.55	16.92	32.87	33.62	100.000	100.000	61.453	62.852
21	1.24080	1.24360	181.58	206.19	30.86	29.39	100.000	100.000	263.685	292.385
22	1.19040	1.24360	175.85	119.15	0.00	0.00	83.000	100.000	209.333	141.839
23	1.26600	1.24360	24.49	47.41	0.00	0.00	98.000	100.000	31.000	60.020
24	1.24920	1.26600	53.22	59.45	3.39	3.45	93.000	101.000	70.768	78.630
25	1.28000	1.27720	55.71	53.87	2.46	2.45	100.000	99.000	74.461	72.086
26	1.27160	1.27720	170.83	58.06	13.61	13.05	98.000	99.000	234.612	90.505
27	1.28000	1.27720	62.28	168.42	2.93	2.77	100.000	99.000	83.461	219.114
28	1.27720	1.24360	3.79	0.00	2.92	2.78	100.000	100.000	8.461	3.461
29	1.20720	1.24360	414.23	284.18	1.94	2.00	74.000	100.000	502.474	345.551
30	1.26320	1.28000	15.18	15.81	1.66	1.64	100.000	100.000	21.307	22.068
31	1.27720	1.24360	33.67	98.69	0.00	0.00	100.000	100.000	43.000	126.048
32	1.27720	1.24360	2.17	0.00	1.11	.93	100.000	100.000	4.154	1.154
33	1.27720	1.24360	16.44	54.48	0.00	0.00	100.000	100.000	21.000	69.582
34	1.20720	1.24360	39.90	26.73	0.00	0.00	83.000	100.000	48.167	32.273
35	1.27720	1.20440	17.28	16.36	100.32	100.21	99.000	100.000	142.898	141.582
36	1.24920	1.28000	31.44	29.11	2.49	2.51	93.000	100.000	42.461	39.579
37	1.20720	1.24360	64.75	44.23	0.00	0.00	83.000	100.000	78.167	53.390
38	1.20720	1.24360	17.40	12.38	0.00	0.00	83.000	100.000	21.000	14.941
39	1.24920	1.28000	.92	1.83	5.41	5.36	93.000	100.000	8.075	9.148
40	1.27720	1.24360	12.53	0.00	0.00	0.00	100.000	100.000	16.000	0.000
41	1.20720	1.24360	24.85	18.48	0.00	0.00	83.000	100.000	30.000	22.313
42	1.24920	1.28000	4.51	4.55	10.56	10.66	93.000	100.000	19.151	19.331
43	1.27440	1.28000	335.53	313.72	6.74	6.45	100.000	100.000	436.229	408.067
44	1.24920	1.24360	1.75	1.77	2.63	2.67	93.000	100.000	5.461	5.533

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO1200. HOURS

E.2. ORIGIN TO GATE (OG) AND GATE TO DESTINATION (GD) TRIPS (MOTOR VEHICLES)

ZONE	OG1	GD1	OG2	GD2	OG
MS	79.	156.	0.	0.	
CH	45.	90.	0.	0.	
PH	9.	18.	0.	0.	
TM	14.	28.	0.	0.	
GL	5.	10.	0.	0.	
OT	215.	72.	0.	0.	
1	3.	2.	29.	32.	
2	2.	2.	24.	25.	
3	6.	7.	81.	88.	
4	1.	1.	11.	12.	
5	8.	7.	84.	90.	
6	3.	4.	44.	47.	
7	0.	0.	4.	5.	
8	0.	0.	1.	1.	
9	0.	0.	3.	4.	
10	0.	0.	5.	6.	
11	0.	0.	0.	0.	
12	4.	9.	16.	50.	
13	0.	1.	7.	6.	
14	6.	11.	23.	60.	
15	2.	2.	36.	35.	
16	1.	0.	9.	9.	
17	2.	1.	27.	27.	
18	13.	40.	53.	223.	
19	3.	4.	24.	24.	
20	6.	7.	43.	43.	
21	41.	36.	172.	200.	
22	25.	19.	121.	79.	
23	5.	7.	19.	39.	
24	4.	5.	49.	54.	
25	3.	2.	55.	54.	
26	35.	11.	146.	59.	
27	13.	26.	52.	145.	
28	1.	0.	6.	2.	
29	52.	42.	256.	171.	
30	1.	1.	16.	17.	
31	6.	15.	27.	84.	
32	1.	0.	2.	1.	
33	3.	8.	13.	46.	
34	6.	4.	28.	18.	
35	16.	16.	101.	100.	
36	2.	2.	30.	28.	
37	9.	7.	45.	30.	
38	3.	2.	12.	8.	
39	1.	1.	5.	6.	
40	2.	0.	10.	0.	
41	3.	3.	17.	12.	
42	2.	2.	13.	13.	
43	65.	49.	278.	271.	
44	0.	0.	4.	4.	

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO1200. HOURS

F.1. CALIBRATION FACTORS (FACTOR*GATE COUNT = ATTRACTIONS OR PRODUCTIONS)

EXTERIOR PRODUCTIONS	EXTERIOR ATTRACTIONS	INTERIOR PRODUCTIONS	INTERIOR ATTRACTIONS
1.004	1.009	.968	.974

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO1200. HOURS

F.2. ORIGIN TO GATE (OG) AND GATE TO DESTINATION (GD) TRIPS
AFTER APPLICATION OF CALIBRATION FACTORS AND PARKING REROUTING (MOTOR VEHICLES)

ZONE	OG1	GD1	OG2	GD2	GG
MS	79.	155.	0.	0.	
CH	45.	89.	0.	0.	
PH	9.	18.	0.	0.	
TM	14.	28.	0.	0.	
GL	5.	10.	0.	0.	
OT	214.	71.	0.	0.	
1	3.	2.	29.	32.	
2	3.	2.	24.	25.	
3	6.	7.	81.	88.	
4	1.	1.	11.	12.	
5	8.	7.	84.	90.	
6	4.	4.	44.	47.	
7	0.	0.	4.	5.	
8	0.	0.	1.	1.	
9	0.	0.	3.	4.	
10	0.	0.	5.	6.	
11	0.	0.	0.	0.	
12	4.	9.	16.	50.	
13	0.	1.	7.	6.	
14	6.	11.	23.	60.	
15	2.	2.	36.	35.	
16	1.	0.	9.	9.	
17	2.	1.	27.	27.	
18	14.	41.	53.	223.	
19	3.	4.	24.	24.	
20	6.	7.	43.	43.	
21	42.	37.	172.	200.	
22	25.	20.	121.	79.	
23	5.	7.	19.	39.	
24	4.	5.	49.	54.	
25	3.	2.	55.	54.	
26	36.	11.	146.	59.	
27	13.	27.	52.	145.	
28	1.	0.	6.	2.	
29	54.	43.	256.	171.	
30	1.	1.	16.	17.	
31	6.	15.	27.	84.	
32	1.	0.	2.	1.	
33	3.	9.	13.	46.	
34	6.	4.	28.	18.	
35	17.	17.	101.	100.	
36	2.	2.	30.	28.	
37	9.	7.	45.	30.	
38	3.	2.	12.	8.	
39	1.	1.	5.	6.	
40	2.	0.	10.	0.	
41	4.	3.	17.	12.	
42	2.	2.	13.	13.	
43	67.	50.	276.	271.	
44	0.	0.	4.	4.	

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO1200. HOURS

G.1 ASSIGNMENT COUNS AND ASSCIATED COMPUTER RUN TIMES

ZONE	ASSGN. VEH. ORG. TO GATES	ASSGN.VEH. GATES TO DEST.	ASSGN. VEH. INTERNAL O-D	ASSIGNMENT TIME	TOTAL TIME	NO. PATHS FOLLOWED
1	2.833	2.386	28.227	2.857	24.598	21
2	2.509	1.886	22.002	.548	25.146	21
3	6.350	6.926	81.674	.639	25.785	30
4	1.195	.864	10.503	.462	26.247	17
5	8.106	7.487	88.621	.791	27.038	36
6	3.546	3.946	44.839	.690	27.728	32
7	.253	.369	4.145	.532	28.260	17
9	.237	.315	2.950	.731	28.991	18
10	0.000	.204	2.671	.414	29.405	18
12	4.201	9.084	13.354	.759	30.164	26
13	.125	1.018	3.593	.379	30.543	22
14	5.779	11.035	20.430	.487	31.030	31
15	2.014	1.783	35.853	.487	31.517	38
16	.818	.340	6.338	.395	31.912	27
17	1.614	1.068	25.350	.446	32.358	34
18	13.781	40.658	46.795	.581	32.939	43
19	3.449	3.635	24.942	.469	33.408	35
20	6.191	7.304	44.981	.565	33.973	43
21	42.185	36.698	168.057	.610	34.583	58
22	25.451	19.919	116.128	.484	35.067	49
23	4.798	7.165	17.551	.419	35.486	39
24	3.683	5.085	49.361	.686	36.172	50
25	2.792	2.473	55.922	.518	36.690	48
26	36.330	11.484	149.024	.788	37.478	62
27	13.281	26.545	49.076	.501	37.979	52
28	1.195	.380	3.886	.369	38.348	37
29	54.208	42.588	233.063	.612	38.960	62
30	1.068	.867	14.754	.501	39.461	45
31	6.471	15.304	24.270	.575	40.036	49
32	.942	.127	.950	.395	40.431	39
33	3.235	8.502	10.267	.424	40.855	46
34	5.801	4.426	26.063	.479	41.334	52
35	16.892	16.521	86.600	.765	42.099	68
36	1.900	1.978	27.403	.545	42.644	56
37	9.352	7.331	42.331	.646	43.290	58
38	2.841	2.075	10.509	.506	43.796	52
39	.862	.909	5.720	.405	44.201	49
40	2.427	0.000	6.338	.424	44.625	51
41	3.551	3.043	16.739	.487	45.112	57
42	1.712	1.843	13.552	.465	45.577	56
43	66.652	49.974	252.132	.700	46.277	80
44	.372	.427	3.916	.425	46.702	53

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO1200. HOURS

G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HDT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
1	81.35	67.10	0.00	13.10	1.15	47.70	8.21	1.27	.09	.15	3.02	3.23	11.53	.31	1.51	3.20	0.00	16.26	63.95
2	8.46	0.00	0.00	0.00	8.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	41.65	39.22	2.43	0.00	0.00	34.78	3.50	.25	0.00	0.00	1.75	.24	.97	.09	.02	.04	0.00	9.71	31.94
4	39.65	0.00	0.00	0.00	39.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	98.09	79.07	11.79	7.24	0.00	72.04	11.93	2.07	.16	.28	3.99	1.00	4.89	.09	.53	1.12	0.00	22.82	75.28
6	36.90	0.00	0.00	0.00	36.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	75.08	19.58	0.00	0.00	55.51	12.82	.57	0.00	0.00	0.00	.42	.05	5.10	.01	.03	.59	0.00	3.53	16.04
8	21.23	8.21	4.05	0.00	8.96	5.30	1.42	.06	.00	0.00	.53	.85	2.66	.07	.42	.95	0.00	2.58	9.69
9	25.86	19.37	0.00	3.92	2.57	6.97	1.05	.02	0.00	0.00	.47	.08	13.34	.76	.04	.55	0.00	3.31	19.98
10	29.36	21.69	4.39	2.42	.86	8.90	2.02	.23	.02	.02	.71	3.34	7.39	.22	1.77	3.88	0.00	5.78	22.71
11	52.42	18.01	0.00	15.45	18.96	16.04	1.53	.11	0.00	0.00	.68	.75	12.72	1.05	.04	.54	0.00	5.57	27.89
12	36.10	22.91	0.00	6.26	6.93	10.76	2.49	.08	.02	0.00	.82	3.16	6.15	.16	1.72	3.79	0.00	6.02	23.15
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1.03	1.03	0.00	0.00	0.00	.57	.11	.05	0.00	0.00	.16	.02	.09	.00	.01	.02	0.00	.22	.81
15	34.73	26.93	0.00	0.00	7.80	24.93	.10	0.00	0.00	0.00	.02	.37	1.15	.05	.11	.20	0.00	5.66	21.27
16	25.13	21.93	2.23	.97	0.00	16.61	4.33	.27	.07	0.00	1.59	.51	.93	.01	.25	.56	0.00	4.98	18.38
17	46.82	30.04	0.00	16.78	0.00	38.15	2.53	.27	0.00	0.00	.84	1.10	3.05	.12	.27	.50	0.00	9.66	37.16
18	29.53	8.41	0.00	21.11	0.00	18.46	5.04	.27	.09	0.00	1.43	.90	1.88	0.00	.45	1.01	0.00	5.73	22.04
19	13.63	12.13	0.00	.12	1.38	7.82	.66	.06	0.00	0.00	.21	.57	2.21	.09	.22	.40	0.00	1.84	10.41
20	9.65	8.41	0.00	0.00	1.23	2.80	1.33	.14	.09	0.00	.28	.89	1.43	0.00	.45	1.00	0.00	1.25	5.40
21	105.85	90.22	0.00	0.00	15.63	7.26	4.41	.91	.26	0.00	0.00	18.57	28.63	0.00	9.29	20.90	0.00	12.10	59.84
22	126.52	79.36	16.89	30.27	0.00	28.57	5.57	.64	.14	.06	1.35	10.92	61.42	2.14	5.37	10.33	0.00	12.39	114.13
23	8.65	0.00	8.82	0.00	.03	1.98	.66	.03	0.00	0.00	.23	.12	5.19	.43	.06	.12	0.00	1.07	7.75
24	2.90	2.90	0.00	0.00	0.00	.13	.18	0.00	.02	0.00	.06	.15	1.91	0.00	.15	.30	0.00	.59	2.31
25	11.59	8.82	0.00	1.40	1.37	3.20	.84	.03	0.00	0.00	.23	.12	5.19	.43	.06	.12	0.00	1.31	8.91
26	6.30	0.00	4.17	0.00	2.13	1.18	.37	0.00	.03	0.00	.08	.15	1.91	0.00	.15	.30	0.00	.80	3.37
27	38.59	38.59	0.00	0.00	0.00	27.34	3.95	.53	.05	.07	1.27	.61	4.04	.05	.22	.46	0.00	8.20	30.39
28	25.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	1.77	0.00	0.00	1.77	0.00	1.18	.22	0.00	0.00	0.00	.05	0.00	.29	0.00	0.00	.03	0.00	.38	1.40
30	3.95	0.00	0.00	0.00	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	12.92	12.92	0.00	0.00	0.00	11.81	.38	0.00	0.00	0.00	.38	.05	.23	.01	.03	.05	0.00	2.70	10.22
32	10.18	10.18	0.00	0.00	0.00	7.03	2.18	.09	0.00	0.00	.74	0.00	.13	.01	0.00	0.00	0.00	2.18	8.00
33	25.96	25.96	0.00	0.00	0.00	24.42	0.00	0.00	0.00	0.00	0.00	.20	.98	.05	.11	.20	0.00	5.60	20.36
34	22.90	0.00	22.90	0.00	0.00	15.21	4.05	.14	.07	0.00	1.21	.51	.90	.01	.25	.55	0.00	4.50	16.64
35	3.36	0.00	2.27	.06	1.03	2.32	.01	0.00	0.00	0.00	.00	.00	.00	0.00	0.00	0.00	0.00	.53	1.81
36	52.62	0.00	0.00	0.00	52.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	104.87	92.42	12.45	0.00	0.00	72.81	12.69	1.68	.09	.17	3.97	1.95	9.80	.35	.47	.88	0.00	20.90	83.96
38	52.80	52.80	0.00	0.00	0.00	29.18	9.63	.49	.02	0.00	3.15	.53	8.41	.70	.21	.47	0.00	8.81	35.28
39	27.08	25.17	1.90	0.00	0.00	20.56	3.07	.27	0.00	.02	1.48	.35	1.08	.10	.05	.09	0.00	5.98	21.09
40	35.41	33.26	2.13	.03	0.00	26.08	6.13	.30	0.00	0.00	1.94	.09	.79	.03	.02	.04	0.00	5.91	22.03
41	192.62	134.27	38.24	0.00	20.12	95.41	19.18	3.43	.25	.44	5.84	8.42	29.98	.41	2.95	6.17	0.00	31.14	141.37
42	172.77	142.24	0.00	10.19	20.33	59.54	16.89	79	.37	0.00	4.27	13.51	34.42	.44	7.05	15.16	0.00	21.76	101.01
43	42.96	0.00	42.58	0.00	.38	42.07	0.00	0.00	0.00	0.00	0.00	.07	.33	.02	.04	.07	0.00	8.83	33.75
44	68.99	48.57	0.00	7.62	12.81	23.78	4.83	.27	.05	.02	1.77	1.57	20.52	.31	1.02	2.03	0.00	8.16	48.03
45	7.62	0.00	0.00	7.62	0.00	5.66	.78	0.00	0.00	0.00	.78	.05	.25	.01	.03	.05	0.00	1.68	5.94
46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	102.54	0.00	0.00	102.54	0.00	7.94	4.82	99	.28	0.00	0.00	21.24	32.75	0.00	10.62	23.90	0.00	13.46	70.79
48	103.21	100.36	0.00	0.00	2.85	11.59	3.25	.32	.10	.01	.59	10.10	57.32	2.02	5.16	9.92	0.00	6.98	93.39
49	101.80	0.00	101.80	0.00	0.00	10.94	3.00	.32	.08	.01	.48	10.13	59.76	2.02	5.16	9.92	0.00	6.88	94.92

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO1200. HOURS

G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

(CONTINUED)

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HDT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
50	104.23	0.00	0.00	1.69	102.54	.24	.06	0.00	0.00	0.00	.01	0.00	1.22	0.00	.08	.08	0.00	.11	1.58
51	157.99	97.67	0.00	60.32	0.00	135.25	10.81	3.70	0.00	.34	2.51	.62	4.19	.18	.12	.28	0.00	33.33	124.29
52	165.71	78.87	0.00	86.84	0.00	145.51	11.29	.61	0.00	0.00	3.45	.74	3.40	.23	.14	.34	0.00	10.50	38.81
53	8.84	8.84	0.00	0.00	0.00	4.31	.81	0.00	0.00	0.00	.19	0.00	3.18	0.00	0.00	.35	0.00	1.50	7.34
54	21.81	20.77	1.04	0.00	0.00	14.09	2.75	.45	.05	.07	1.01	.28	2.48	.04	.20	.39	0.00	4.63	17.18
55	79.35	75.58	3.77	0.00	0.00	52.15	9.10	1.31	.09	.15	3.11	1.45	10.23	.30	.51	.96	0.00	15.51	63.83
56	54.08	8.46	.86	44.39	.37	27.77	9.23	.38	0.00	0.00	3.14	.13	11.96	1.10	0.00	0.00	0.00	8.59	36.77
57	78.12	0.00	64.98	9.01	4.13	46.96	9.35	1.75	0.00	0.00	6.40	.15	8.38	.44	.08	.48	0.00	14.69	59.31
58	130.15	59.32	70.83	0.00	0.00	93.18	17.56	1.75	.57	.25	5.66	.99	8.31	.21	.58	1.09	0.00	26.62	103.53
59	133.98	15.05	0.00	53.30	65.64	49.39	6.02	.37	.14	0.00	1.58	2.77	7.85	.03	.07	.12	0.00	12.94	55.40
60	182.94	0.00	0.00	5.03	177.91	2.93	.70	.01	.00	0.00	.18	.25	.56	0.00	.13	.28	0.00	1.01	4.03
61	4.67	0.00	0.00	0.00	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	9.09	5.51	0.00	3.57	0.00	7.37	1.42	.01	.04	0.00	.24	0.00	0.00	0.00	0.00	0.00	0.00	1.98	7.10
63	64.65	12.93	0.00	8.01	43.71	17.64	1.82	0.00	0.00	0.00	.42	.01	.94	.00	.00	.11	0.00	3.64	13.36
64	129.25	0.00	70.84	47.20	11.20	85.14	20.68	.35	.41	.04	8.93	.35	1.90	.02	.06	.18	0.00	25.12	92.92
65	97.83	0.00	23.01	21.54	53.29	31.21	4.32	.64	0.00	.02	1.88	.08	5.77	.21	.03	.39	0.00	8.52	36.03
66	113.72	19.83	7.27	62.35	24.27	43.94	10.11	.28	.36	0.00	3.29	5.19	16.13	.29	3.27	6.59	0.00	17.97	71.48
67	37.59	37.59	0.00	0.00	0.00	29.02	5.87	.23	.08	0.00	2.39	0.00	0.00	0.00	0.00	0.00	0.00	8.08	29.51
68	31.21	31.21	0.00	0.00	0.00	24.10	3.34	0.00	0.00	0.00	3.34	.06	.28	.01	.03	.06	0.00	6.68	24.54
69	31.73	31.73	0.00	0.00	0.00	24.81	4.77	.16	.06	0.00	1.93	0.00	0.00	0.00	0.00	0.00	0.00	6.93	24.80
70	31.21	0.00	0.00	0.00	31.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71	54.18	43.48	9.07	0.00	1.63	39.30	5.34	.46	0.00	0.00	1.42	1.29	4.22	.18	.12	.22	0.00	10.68	41.87
72	91.87	40.39	47.15	0.00	4.33	61.62	12.96	1.07	.40	0.00	5.60	.62	4.25	.32	.22	.48	0.00	14.27	54.45
73	20.60	12.92	0.00	1.03	6.66	12.38	.48	.05	0.00	0.00	.54	.06	.32	.01	.03	.06	0.00	2.91	11.03
74	17.17	17.17	0.00	0.00	0.00	8.55	2.51	.11	.00	0.00	.91	.85	2.80	.08	.42	.95	0.00	3.66	13.51
75	44.69	0.00	0.00	27.10	17.59	26.93	0.00	0.00	0.00	0.00	0.00	.02	.11	.01	.01	.02	0.00	5.77	21.34
76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
77	44.82	6.76	0.00	0.00	38.06	4.43	.66	0.00	0.00	0.00	.01	.24	1.18	.03	.07	.13	0.00	1.28	5.47
78	49.55	5.16	0.00	1.81	42.58	3.50	.75	.23	.01	0.00	.66	.33	.92	0.00	.16	.41	0.00	1.08	4.13
79	60.25	25.56	34.69	0.00	0.00	49.67	4.76	.47	0.00	.02	2.11	.88	1.92	.13	.10	.19	0.00	13.57	46.68
80	53.14	37.23	14.41	1.50	0.00	39.24	9.45	.43	0.00	0.00	3.01	.06	.93	.02	.00	.00	0.00	9.78	36.43
81	114.92	59.51	0.00	53.37	2.04	76.88	19.13	.80	.02	.04	8.80	1.46	5.27	.16	.09	.23	0.00	23.72	89.16
82	97.25	41.67	0.00	55.58	0.00	70.26	13.67	.97	.01	0.00	4.07	.80	6.03	.36	.32	.76	0.00	12.60	49.78
83	123.48	88.90	24.96	9.62	0.00	99.77	11.69	.82	0.00	.04	1.55	3.00	6.08	.18	.10	.26	0.00	24.85	98.63
84	82.75	81.63	1.12	0.00	0.00	59.18	11.79	.94	0.00	0.00	4.05	.46	5.44	.36	.15	.38	0.00	9.85	38.03
85	164.08	109.23	40.64	0.00	14.21	128.44	10.84	2.35	0.00	0.00	1.97	.67	4.93	.19	.15	.34	0.00	29.44	111.56
86	159.32	118.68	29.15	0.00	11.48	124.44	12.65	1.96	.02	.23	3.47	.75	3.79	.20	.09	.24	0.00	6.08	22.88
87	162.88	144.07	0.00	18.81	0.00	124.26	15.03	3.08	.14	.37	4.58	3.14	11.88	.14	.09	.17	0.00	32.32	130.56
88	217.55	190.19	27.36	0.00	0.00	159.93	32.76	1.38	.81	0.00	9.20	2.03	7.61	.33	1.15	2.35	0.00	35.07	131.60
89	172.82	107.81	57.57	0.00	7.44	120.92	23.13	1.52	.14	0.00	11.31	1.12	5.48	.30	.51	.95	0.00	34.35	131.03
90	273.52	231.23	0.00	42.29	0.00	195.08	51.18	.82	.41	0.00	18.72	.89	5.05	.24	.39	.75	0.00	35.92	131.14
91	212.75	212.75	0.00	0.00	0.00	156.38	28.69	6.20	.14	.65	11.75	1.18	6.11	.29	.47	.88	0.00	44.66	168.08
92	188.10	138.13	49.97	0.00	0.00	138.58	28.22	3.69	.03	.53	10.97	.61	4.42	.14	.32	.60	0.00	5.16	18.00
93	109.83	99.99	2.67	6.07	1.11	57.19	10.05	1.38	.09	0.00	6.87	5.25	21.41	.53	1.85	4.10	0.00	17.96	90.77
94	131.19	115.37	0.00	2.27	13.56	67.87	14.29	.27	.11	0.00	6.82	5.19	14.93	.19	2.47	5.48	0.00	3.40	18.06
95	36.87	6.83	5.15	0.00	24.89	4.10	.70	.09	0.00	0.00	.21	.04	6.72	.07	.02	.03	0.00	1.51	10.47
96	7.42	5.24	0.00	1.27	.91	2.09	.44	0.00	.01	0.00	.08	.59	1.19	.32	.59	1.19	0.00	.43	2.45
97	1.42	0.00	1.42	0.00	0.00	1.11	.15	0.00	0.00	0.00	.15	0.00	0.00	0.00	0.00	0.00	0.00	.28	1.14
98	2.88	0.00	0.00	0.00	2.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO1200. HOURS

G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

(CONTINUED)

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HDT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101	95.41	93.53	0.00	1.88	0.00	69.64	12.53	2.24	.17	.31	3.68	1.02	4.53	.10	.40	.79	0.00	21.50	73.91
102	58.03	30.64	8.92	18.47	0.00	39.95	9.35	.15	0.00	0.00	2.63	.05	5.74	0.00	.07	.10	0.00	10.23	40.83
103	122.91	40.71	0.00	82.20	0.00	83.08	15.63	2.19	.18	.25	5.51	2.12	11.79	.36	.62	1.17	0.00	24.79	98.11
104	105.37	51.63	0.00	53.74	0.00	62.30	15.56	2.79	.01	0.00	10.43	.62	11.89	.72	.22	.82	0.00	17.20	69.35
105	86.84	0.00	12.85	63.37	10.61	66.53	6.46	0.00	0.00	0.00	.04	1.62	1.36	.03	.07	.12	0.00	14.94	61.29
106	61.25	0.00	0.00	53.56	7.70	31.65	12.86	.01	.04	0.00	7.49	.17	1.00	.03	.10	.19	0.00	11.28	42.27
107	147.58	0.00	13.74	100.71	33.13	76.99	19.30	.52	0.00	0.00	6.72	1.45	7.69	.35	.50	.93	0.00	22.46	91.99
108	196.88	0.00	37.57	0.00	159.31	27.20	3.12	1.65	.02	.22	.71	.12	4.33	.04	.05	.10	0.00	7.28	30.29
109	86.53	50.62	35.91	0.00	0.00	57.97	9.22	.94	0.00	0.00	2.15	.54	15.28	.17	.07	.20	0.00	16.68	69.84
110	168.12	100.92	62.14	0.00	5.06	114.61	23.95	.74	.20	0.00	7.91	2.41	9.32	.48	1.14	2.30	0.00	19.06	72.89
111	67.50	17.62	8.52	15.67	25.68	36.94	3.31	.20	0.00	0.00	.61	.25	.47	.02	.00	.02	0.00	6.67	33.15
112	73.00	11.14	4.80	38.84	18.22	36.91	9.52	.55	.20	.07	3.25	.70	2.35	.04	.38	.60	0.00	11.37	43.41
113	171.72	31.49	0.00	36.90	103.33	55.67	4.77	.17	0.00	0.00	4.92	1.08	1.79	0.00	0.00	0.00	0.00	14.16	54.23
114	107.72	0.00	1.11	26.67	79.94	17.40	4.51	.08	.12	0.00	1.64	.70	1.94	.04	.45	.89	0.00	5.98	21.80
115	69.29	0.00	36.50	27.01	5.78	45.26	7.09	0.00	0.00	0.00	.73	.05	10.34	.00	.00	.03	0.00	12.17	51.34
116	71.40	0.00	7.44	62.14	1.82	42.47	11.17	.52	.20	.07	4.93	1.74	5.21	.18	1.04	2.05	0.00	14.08	53.34
117	1.46	0.00	1.46	0.00	0.00	.13	.03	0.00	0.00	0.00	.01	.17	.83	.04	.09	.17	0.00	.07	.97
118	4.29	4.29	0.00	0.00	0.00	.80	.31	.03	.01	0.00	.05	.55	1.61	.05	.28	.59	0.00	.30	3.99
119	155.81	105.51	15.20	4.43	30.66	118.15	3.19	.20	0.00	0.00	1.93	.23	1.15	.03	.07	.18	0.00	16.44	61.26
120	191.48	0.00	107.37	84.11	0.00	151.53	17.75	2.90	.20	.34	6.29	2.00	6.94	.29	1.10	2.15	0.00	39.88	149.07
121	96.57	0.00	47.03	48.24	1.30	83.11	5.91	1.67	0.00	0.00	.86	.19	3.21	.04	.10	.18	0.00	17.90	68.86
122	104.33	0.00	98.62	3.24	2.47	83.29	8.89	5.05	.02	.65	1.58	.15	2.16	.01	.01	.02	0.00	21.45	80.41
123	75.16	0.00	25.31	33.33	16.52	46.91	4.76	2.26	.03	.33	.70	.12	3.33	.04	.06	.10	0.00	11.89	46.74
124	65.32	7.49	2.22	5.64	49.97	9.05	2.40	.01	.05	0.00	1.33	.15	2.02	.03	.10	.20	0.00	3.18	12.17
125	37.67	36.40	1.27	0.00	0.00	30.12	3.34	.76	.01	.07	1.97	.00	1.40	0.00	0.00	0.00	0.00	7.96	29.71
126	18.61	14.53	0.00	2.88	1.20	13.64	1.89	0.00	0.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00	0.00	1.71	6.30
127	19.95	19.95	0.00	0.00	0.00	16.21	2.00	.45	0.00	.05	1.24	0.00	0.00	0.00	0.00	0.00	0.00	4.36	15.60
128	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
129	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
131	19.95	0.00	19.95	0.00	0.00	16.21	2.00	.45	0.00	.05	1.24	0.00	0.00	0.00	0.00	0.00	0.00	4.36	15.60
132	19.95	0.00	0.00	19.95	0.00	16.21	2.00	.45	0.00	.05	1.24	0.00	0.00	0.00	0.00	0.00	0.00	4.36	15.60
133	131.85	54.27	0.00	9.26	68.32	46.98	7.40	1.30	0.00	.07	1.67	.60	5.09	.16	.07	.19	0.00	13.27	50.27
134	164.85	73.11	32.23	.38	59.14	76.02	15.43	.88	.10	0.00	5.41	.72	5.83	.33	.30	.70	0.00	13.27	50.03
135	117.97	1.46	0.00	0.00	116.51	.13	.03	0.00	0.00	0.00	.01	.17	.83	.04	.09	.17	0.00	.07	.97
136	158.91	117.03	14.68	27.20	0.00	138.54	11.14	3.15	.01	.34	1.96	.64	2.11	.06	.31	.65	0.00	32.99	121.64
137	.86	.86	0.00	0.00	0.00	.19	.04	0.00	0.00	0.00	.01	0.00	.61	.01	0.00	0.00	0.00	.07	.78
138	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
139	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	2.90	2.90	0.00	0.00	0.00	2.27	.31	0.00	0.00	0.00	.31	0.00	0.00	0.00	0.00	0.00	0.00	.63	2.27
141	26.32	0.00	0.00	10.12	16.20	8.40	.96	.36	0.00	0.00	.39	.00	.00	.00	.00	.00	0.00	2.17	7.95
142	1.71	0.00	0.00	1.71	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.37	1.34
143	1.71	0.00	1.71	0.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.37	1.34
144	13.02	0.00	0.00	13.02	0.00	10.67	1.28	.36	0.00	0.00	.70	.00	.00	.00	.00	.00	0.00	2.80	10.22
145	45.59	0.00	1.71	0.00	43.88	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.37	1.34
146	58.09	0.00	43.31	7.56	7.22	38.55	6.27	.58	.07	.02	1.98	.12	2.98	0.00	.10	.20	0.00	10.72	40.15
147	152.54	136.43	0.00	16.11	0.00	127.04	12.36	.81	.05	0.00	3.30	.70	7.47	.17	.20	.45	0.00	31.95	120.21
148	130.36	130.36	0.00	0.00	0.00	109.25	11.09	.61	0.00	0.00	3.11	.74	5.04	.20	.09	.24	0.00	0.00	0.00
149	321.39	276.53	0.00	0.00	44.86	178.32	35.42	4.98	.23	.65	19.28	5.98	23.97	.74	2.20	4.75	0.00	53.57	222.96

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO1200. HOURS

G.2 VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

(CONTINUED)

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HDT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
150	359.86	188.10	150.69	0.00	21.06	230.19	45.88	4.64	.16	.53	19.30	5.22	24.32	.40	2.59	5.54	0.00	7.32	26.19
151	128.85	0.00	0.00	98.94	29.91	51.30	9.84	.51	.09	0.00	7.88	4.88	18.25	.48	1.77	3.95	0.00	16.06	82.87
152	143.71	0.00	4.42	129.29	10.01	77.57	15.95	.16	.13	0.00	8.15	4.57	19.69	.26	2.27	4.95	0.00	2.18	8.22
153	4.42	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
154	1.89	.95	0.00	.94	0.00	.53	.06	.03	0.00	0.00	.01	.27	.56	.01	.14	.30	0.00	.31	1.58
155	6.83	0.00	0.00	0.00	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
156	1.61	1.61	0.00	0.00	0.00	.44	.10	0.00	0.00	0.00	.02	.16	.32	.08	.16	.32	0.00	.14	1.47
157	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
158	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
159	61.84	24.46	9.21	24.93	3.25	46.47	5.94	1.16	.03	.09	3.03	.01	1.86	.00	.00	.00	0.00	12.00	46.59
160	33.83	18.61	0.00	4.54	10.68	15.12	2.24	0.00	0.00	0.00	1.97	.45	1.83	.23	.44	.87	0.00	1.95	7.25
161	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
162	12.46	0.00	0.00	0.00	12.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
163	4.29	0.00	0.00	4.29	0.00	.80	.31	.03	.01	0.00	.05	.55	1.61	.05	.28	.59	0.00	.30	3.99
164	1.46	1.46	0.00	0.00	0.00	.13	.03	0.00	0.00	0.00	.01	.17	.83	.04	.09	.17	0.00	.07	.97
165	4.29	4.29	0.00	0.00	0.00	.80	.31	.03	.01	0.00	.05	.55	1.61	.05	.28	.59	0.00	.30	3.99
166	1.46	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
167	300.03	0.00	0.00	0.00	300.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
168	205.61	205.61	0.00	0.00	0.00	151.01	24.24	3.73	.37	.19	5.59	16.78	3.40	.23	.02	.02	.02	0.00	0.00
169	160.39	0.00	0.00	160.39	0.00	114.13	18.32	2.82	.28	.14	4.23	16.78	3.40	.23	.02	.02	.02	0.00	0.00
170	70.97	0.00	0.00	0.00	70.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
171	371.00	300.03	70.97	0.00	0.00	269.40	43.24	6.65	.67	.33	9.98	33.38	6.77	.45	.05	.05	.05	0.00	0.00
172	450.95	320.59	0.00	130.36	0.00	327.47	54.03	5.75	.08	.49	20.78	5.84	27.73	.61	2.58	5.58	0.00	0.00	0.00
173	43.62	12.73	0.00	18.52	12.38	8.02	1.74	.14	.04	0.00	.85	4.39	8.27	.17	2.38	5.25	0.00	6.58	24.67
174	35.60	18.99	0.00	14.46	2.14	13.79	1.97	.28	.02	.04	.58	1.19	13.93	1.02	.07	.56	0.00	4.96	28.49
175	26.93	0.00	0.00	25.96	.98	24.42	0.00	0.00	0.00	0.00	0.00	.20	.98	.05	.11	.20	0.00	5.60	20.36
176	23.93	22.90	1.03	0.00	0.00	15.79	4.16	.20	.07	0.00	1.37	.52	.98	.01	.26	.57	0.00	4.72	17.45
177	25.68	25.68	0.00	0.00	0.00	19.34	2.89	.27	0.00	.02	1.48	.35	1.08	.10	.05	.09	0.00	5.75	19.93
178	33.26	32.02	1.23	0.00	0.00	24.50	5.88	.30	0.00	0.00	1.88	.05	.61	.02	0.00	0.00	0.00	5.51	20.51
179	79.36	9.91	0.00	69.45	0.00	27.34	5.33	.64	.14	.06	1.21	8.09	27.47	.45	2.78	5.84	0.00	8.71	70.65
180	89.21	87.33	1.88	0.00	0.00	15.19	7.07	.77	.47	0.00	1.41	14.70	25.61	.04	7.38	16.58	0.00	11.12	57.43
181	162.98	162.98	0.00	0.00	0.00	91.72	17.38	2.86	.31	.37	4.86	8.28	28.11	.41	2.80	5.88	0.00	28.79	134.19
182	148.50	58.03	76.86	3.61	10.00	54.11	15.06	.83	.37	0.00	3.90	13.35	29.12	.00	6.71	15.04	0.00	20.23	92.39
183	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
184	8.82	0.00	8.82	0.00	0.00	.28	.17	.04	.01	0.00	0.00	2.00	3.08	0.00	1.00	2.25	0.00	.64	8.19
185	107.76	104.87	0.00	2.90	0.00	72.95	12.87	1.68	.11	.17	4.03	2.10	11.71	.35	.62	1.18	0.00	21.49	86.27
186	61.62	53.11	7.60	.92	0.00	31.16	10.29	.51	.02	0.00	3.38	.65	13.61	1.13	.27	.59	0.00	9.88	43.02
187	40.36	0.00	0.00	40.36	0.00	28.52	4.17	.53	.05	.07	1.32	.61	4.33	.05	.22	.49	0.00	8.57	31.79
188	28.95	25.00	3.95	0.00	0.00	19.38	3.65	0.00	0.00	0.00	.84	0.00	4.57	0.00	0.00	.51	0.00	4.94	20.06
189	31.47	14.16	4.67	12.64	0.00	26.23	1.80	.08	0.00	0.00	.69	.38	2.07	.02	.04	.15	0.00	6.64	24.83
190	30.28	10.18	0.00	20.11	0.00	22.11	5.02	.09	0.00	0.00	1.39	0.00	1.51	.01	0.00	.15	0.00	5.62	20.72
191	28.95	0.00	28.95	0.00	0.00	19.38	3.65	0.00	0.00	0.00	.84	0.00	4.57	0.00	0.00	.51	0.00	4.94	20.06
192	40.36	21.81	18.55	0.00	0.00	28.52	4.17	.53	.05	.07	1.32	.61	4.33	.05	.22	.49	0.00	8.57	31.79
193	37.27	33.33	0.00	2.89	1.04	33.84	.67	0.00	0.00	0.00	0.00	.25	1.07	.05	.12	.21	0.00	7.80	28.42
194	34.28	22.90	11.38	0.00	0.00	22.48	5.42	.82	.07	0.00	3.25	.51	.92	.01	.25	.56	0.00	6.90	25.62
195	11.12	8.84	0.00	2.27	0.00	6.58	.81	0.00	0.00	0.00	.19	0.00	3.18	0.00	0.00	.35	0.00	2.02	9.10
196	35.81	24.42	0.00	11.38	0.00	22.83	4.51	1.19	.06	.07	3.19	.35	2.85	.05	.24	.46	0.00	7.49	28.32
197	66.18	7.79	41.24	0.00	17.15	29.55	5.55	2.37	0.00	0.00	7.28	.17	3.59	.02	.06	.44	0.00	7.64	31.28
198	31.65	0.00	30.49	1.17	0.00	20.02	4.73	.57	.11	.07	1.53	.48	3.17	.06	.30	.60	0.00	6.61	25.05
199	14.41	2.54	7.34	0.00	4.53	7.91	.26	0.00	0.00	0.00	.02	.14	1.30	.03	.08	.14	0.00	1.94	7.94

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO1200. HOURS

G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

(CONTINUED)

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HDT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
200	42.40	6.97	0.00	0.00	35.43	3.50	.75	.23	.01	0.00	.66	.33	.92	0.00	.16	.41	0.00	1.08	4.13
201	175.04	141.34	0.00	30.92	2.79	119.32	19.82	2.93	.15	.36	7.51	3.89	16.36	.29	.56	1.07	0.00	34.29	137.97
202	229.60	35.41	119.87	61.17	13.16	160.18	32.79	1.83	.77	0.00	10.18	.26	9.31	.47	.11	.55	0.00	34.54	133.15
203	160.33	107.08	14.69	38.56	0.00	106.56	23.86	3.25	.14	.37	6.77	2.92	14.74	.30	.50	.93	0.00	31.41	128.92
204	295.06	295.06	0.00	0.00	0.00	191.17	61.48	1.03	.79	0.00	19.94	3.18	11.73	.46	1.77	3.50	0.00	43.66	162.70
205	156.01	109.09	45.06	1.86	0.00	82.05	18.78	3.53	.19	.46	6.24	6.98	27.17	.94	3.14	6.54	0.00	27.53	128.48
206	227.84	179.51	0.00	48.34	0.00	126.55	28.53	.67	.83	0.00	5.66	13.18	30.48	.25	6.88	14.81	0.00	29.29	128.63
207	34.49	8.62	4.13	21.74	0.00	15.93	3.87	.21	.05	.02	.94	1.47	10.31	.75	.33	.61	0.00	4.51	29.97
208	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
209	53.78	32.41	21.37	0.00	0.00	18.42	4.44	.27	.08	.02	1.12	1.69	23.95	.32	1.16	2.31	0.00	6.86	46.92
210	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
211	5.21	0.00	0.00	5.21	0.00	.30	.39	0.00	.03	0.00	.13	.17	3.68	.02	.17	.33	0.00	.36	4.83
212	16.44	0.00	7.62	8.82	0.00	5.94	.95	.04	.01	0.00	.78	2.05	3.33	.01	1.03	2.30	0.00	2.31	14.13
213	32.41	32.41	0.00	0.00	0.00	4.35	1.09	.09	.03	0.00	[illegible]	1.13	22.03	.07	1.09	2.19	0.00	3.29	29.11
214	26.38	0.00	0.00	13.11	13.27	1.86	.51	.03	0.00	0.00	.16	.92	8.36	.50	.26	.49	0.00	.94	12.17
215	42.19	22.53	17.01	2.66	0.00	30.06	6.06	.23	.09	0.00	2.42	.55	1.78	0.00	.28	.72	0.00	8.57	33.62
216	33.23	23.60	1.60	8.03	0.00	20.21	2.97	0.00	0.00	0.00	2.65	1.04	2.70	.55	1.03	2.06	0.00	6.63	26.59
217	40.92	40.92	0.00	0.00	0.00	29.02	5.87	.23	.08	0.00	2.39	.55	1.78	0.00	.28	.72	0.00	8.27	32.65
218	23.60	23.60	0.00	0.00	0.00	18.44	2.55	0.00	0.00	0.00	2.55	.01	.03	.00	.00	.01	0.00	5.00	18.60
219	124.39	110.73	0.00	0.00	13.66	66.33	9.58	3.48	.09	.46	3.17	4.85	16.62	.45	1.76	3.93	0.00	19.67	91.06
220	163.30	148.49	8.78	2.37	3.65	90.76	19.58	.39	.44	0.00	4.66	8.46	21.05	.30	4.32	9.69	0.00	15.66	74.07
221	26.71	0.00	26.71	0.00	0.00	19.33	4.41	.08	0.00	0.00	1.22	0.00	1.51	.01	0.00	.15	0.00	4.84	17.93
222	148.96	116.36	3.48	29.12	0.00	106.72	26.17	.67	.46	0.00	11.29	.55	2.60	.02	.13	.34	0.00	31.73	117.23
223	244.78	160.33	84.45	0.00	0.00	180.19	31.16	3.25	.14	.37	7.09	4.53	16.10	.33	.57	1.05	0.00	48.10	196.68
224	348.61	203.81	144.81	0.00	0.00	222.83	74.35	1.04	.83	0.00	27.43	3.34	12.73	.49	1.87	3.69	0.00	54.95	204.97
225	148.77	121.76	27.01	0.00	0.00	94.61	23.47	1.18	.14	0.00	11.40	1.10	15.15	.30	.50	.93	0.00	29.26	119.51
226	293.37	256.22	31.35	5.81	0.00	195.03	56.43	.90	.61	0.00	23.36	2.51	9.92	.42	1.43	2.77	0.00	39.33	145.43
227	252.02	179.42	0.00	6.32	66.28	133.24	26.78	4.24	.14	.33	11.93	1.18	6.26	.29	.47	.88	0.00	38.83	146.92
228	163.44	120.29	0.00	39.01	4.14	113.44	26.12	.80	.06	0.00	10.81	.72	6.10	.17	.38	.70	0.00	8.95	35.38
229	130.68	0.00	121.68	0.00	9.00	70.66	11.67	1.72	.09	0.00	8.00	4.98	18.13	.50	1.84	4.09	0.00	20.58	101.10
230	140.28	115.37	20.27	1.87	2.76	74.03	15.55	.17	.13	0.00	7.70	6.11	23.56	.42	3.09	6.73	0.00	3.01	18.06
231	204.50	102.81	92.81	0.00	8.89	126.08	16.27	5.50	.09	.70	9.71	6.15	24.84	.49	1.79	3.99	0.00	35.95	159.66
232	167.08	141.82	0.00	15.30	9.96	92.57	22.24	.39	.40	0.00	5.88	6.36	18.96	.35	3.16	6.82	0.00	15.40	65.47
233	34.79	34.79	0.00	0.00	0.00	28.96	3.18	.76	.01	.07	1.81	0.00	0.00	0.00	0.00	0.00	0.00	7.60	27.19
234	14.53	0.00	12.46	0.00	2.07	9.76	1.35	0.00	0.00	0.00	1.35	0.00	0.00	0.00	0.00	0.00	0.00	1.09	4.04
235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
236	12.46	0.00	0.00	12.46	0.00	9.76	1.35	0.00	0.00	0.00	1.35	0.00	0.00	0.00	0.00	0.00	0.00	1.09	4.04
237	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
238	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
239	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	1.69	0.00	0.00	0.00	1.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*189.79850.82793.02874.1*71.82*59.88*63.86176.87 19.06 13.41683.59429.04*29.56 41.96158.50342.05 .09*93.91*91.56

H.2. INTERSECTION DELAYS AND QUEUEING

		N-APPR DELAY (SEC)	QUEUE (VEH)	E-APPR DELAY (SEC)	QUEUE (VEH)	S-APPR DELAY (SEC)	QUEUE (VEH)	W-APPR DELAY (SEC)	QUEUE (VEH)
INTERSECTION	1	4.	0.	1.	0.	4.	0.	1.	0.
INTERSECTION	2	4.	0.	1.	0.	4.	0.	1.	0.
INTERSECTION	3	4.	0.	1.	0.	4.	0.	1.	0.
INTERSECTION	4	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	5	0.	0.	0.	0.	0.	0.	1.	0.
INTERSECTION	6	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	7	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	8	4.	0.	1.	0.	4.	0.	1.	0.
INTERSECTION	9	5.	0.	2.	0.	5.	0.	2.	0.
INTERSECTION	10	0.	0.	0.	0.	0.	0.	1.	0.
INTERSECTION	11	2.	0.	5.	0.	2.	0.	5.	0.
INTERSECTION	12	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	13	4.	0.	0.	0.	4.	0.	0.	0.
INTERSECTION	14	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	15	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	16	0.	0.	1.	0.	0.	0.	1.	0.
INTERSECTION	17	4.	0.	0.	0.	4.	0.	0.	0.
INTERSECTION	18	0.	0.	1.	0.	0.	0.	0.	0.
INTERSECTION	19	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	20	5.	0.	2.	0.	5.	0.	2.	0.
INTERSECTION	21	5.	0.	3.	0.	5.	0.	3.	0.
INTERSECTION	22	0.	0.	4.	0.	0.	0.	4.	0.
INTERSECTION	23	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	24	0.	0.	1.	0.	0.	0.	0.	0.
INTERSECTION	25	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	26	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	27	0.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION	28	0.	0.	1.	0.	0.	0.	1.	0.
INTERSECTION	29	0.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION	30	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	31	1.	0.	4.	0.	1.	0.	4.	0.
INTERSECTION	32	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	33	0.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION	34	5.	0.	3.	0.	5.	0.	3.	0.
INTERSECTION	35	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	36	1.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION	37	0.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION	38	0.	0.	0.	0.	0.	0.	1.	0.
INTERSECTION	39	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	40	0.	0.	1.	0.	1.	0.	1.	0.
INTERSECTION	41	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	42	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	43	0.	0.	1.	0.	1.	0.	1.	0.
INTERSECTION	44	0.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION	45	5.	0.	2.	0.	5.	0.	2.	0.
INTERSECTION	46	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	47	0.	0.	4.	0.	0.	0.	4.	0.
INTERSECTION	48	1.	0.	4.	0.	1.	0.	4.	0.
INTERSECTION	49	0.	0.	1.	0.	0.	0.	0.	0.
INTERSECTION	50	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	51	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	52	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION	53	0.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION	54	6.	1.	4.	1.	6.	1.	4.	1.

```
INTERSECTION   55       2.      0.          5.      0.          2.      0.          5.      0.
INTERSECTION   56       0.      0.          0.      0.          0.      0.          0.      0.
INTERSECTION   57       1.      0.          4.      0.          1.      0.          4.      0.
INTERSECTION   58       0.      0.          0.      0.          0.      0.          0.      0.
INTERSECTION   59       1.      0.          0.      0.          1.      0.          0.      0.
INTERSECTION   60       0.      0.          0.      0.          0.      0.          0.      0.

INTERSECTION   61
                    PHASE 1                       PHASE 2                       PHASE 3                       PHASE 4
TIME(SEC)             13.                           19.                           -0.                           -0.
V/GCAP                .05569                        .14661                      0.00000                       0.00000
           NORTH-APPR SOUTH-APPR          EAST-APPR  WEST-APPR         N-APP-LEFT S-APP-LEFT         E-APP-LEFT W-APP-LEFT
DELAY(SEC)        6.         6.                4.         3.                 6.         6.                 4.         3.
QUEUE(VEH)        0.         0.                0.         0.                 0.         0.                 0.         0.
VOLUME(VEH)     160.         0.              371.       206.                 0.         0.                 0.         0.
CAPACITY(VEH)  1040.       867.             1378.      1503.                 0.         0.                 0.         0.
V/GCAP        .05569    0.00000            .14661     .07449            0.00000    0.00000            0.00000    0.00000

                 N-APPR DELAY QUEUE     E-APPR DELAY QUEUE     S-APPR DELAY QUEUE     W-APPR DELAY QUEUE
                        (SEC)  (VEH)           (SEC)  (VEH)           (SEC)  (VEH)           (SEC)  (VEH)
INTERSECTION   62        0.     0.              0.     0.              0.     0.              0.     0.
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BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1300 CALIBRATE PERIOD FROM 1100. TO 1200. HOURS

H.3. PARKING LOT TRAVEL TIMES AND DELAYS

	ZONE	TOTAL TIME (SEC)	TT ARRV (SEC)	TT DEPT (SEC)	BACKNG Q (SEC)	Q DELAY (SEC)	DEPARTS (VEH)	ARRVALS (VEH)	LENGTH (METERS)
PARKNG	1	2619.997	35.943	47.943	0.000	0.000	30.415	32.324	227.228
PARKNG	2	1648.428	25.961	37.961	0.000	0.000	25.410	26.341	165.402
PARKNG	3	7903.210	39.068	51.068	0.000	0.000	84.444	91.914	243.341
PARKNG	4	833.533	27.941	39.941	0.000	0.000	12.091	12.548	178.552
PARKNG	5	8639.557	41.443	53.443	0.000	0.000	88.610	94.199	254.120
PARKNG	6	4362.930	45.895	57.895	0.000	0.000	40.833	43.555	292.164
PARKNG	7	374.386	40.460	52.460	0.000	0.000	3.685	4.475	257.818
PARKNG	8	31.948	19.041	31.041	0.000	0.000	.629	.652	121.807
PARKNG	9	289.206	37.712	49.712	0.000	0.000	2.992	3.724	240.526
PARKNG	10	386.183	36.420	48.420	0.000	0.000	4.176	5.052	231.070
PARKNG	11	0.000	36.406	48.406	0.000	0.000	0.000	0.000	233.001
PARKNG	12	3880.026	57.410	69.410	0.000	0.000	16.578	47.542	241.943
PARKNG	13	665.604	40.641	52.641	0.000	0.000	7.089	7.195	260.017
PARKNG	14	4465.555	45.900	57.900	0.000	0.000	26.316	64.093	244.219
PARKNG	15	2822.261	36.191	48.191	0.000	0.000	33.802	32.973	231.621
PARKNG	16	668.127	35.192	47.192	0.000	0.000	8.288	7.872	225.229
PARKNG	17	1377.836	21.374	33.374	0.000	0.000	25.359	24.867	136.793
PARKNG	18	18747.497	61.630	73.630	0.000	0.000	59.418	233.204	268.429
PARKNG	19	1736.899	38.197	50.197	0.000	0.000	19.593	19.724	243.554
PARKNG	20	7021.257	79.924	91.924	0.000	0.000	40.435	41.343	511.068
PARKNG	21	17477.605	41.065	53.065	0.000	0.000	177.448	196.306	247.829
PARKNG	22	8440.227	39.177	51.177	0.000	0.000	108.611	73.560	250.733
PARKNG	23	1815.221	25.210	37.210	0.000	0.000	21.132	40.813	140.331
PARKNG	24	14855.803	143.439	155.439	0.000	0.000	47.198	52.422	904.179
PARKNG	25	3180.322	21.792	33.792	0.000	0.000	57.952	56.079	139.466
PARKNG	26	15084.003	52.374	64.374	0.000	0.000	178.411	68.715	335.196
PARKNG	27	15209.780	61.062	73.062	0.000	0.000	65.278	170.980	249.975
PARKNG	28	385.695	36.725	48.725	0.000	0.000	6.032	2.499	235.038
PARKNG	29	25348.611	55.765	67.765	0.000	0.000	238.859	164.304	356.895
PARKNG	30	1375.463	35.384	47.384	0.000	0.000	16.373	16.946	223.942
PARKNG	31	5957.590	47.008	59.008	0.000	0.000	30.318	88.678	247.755
PARKNG	32	333.979	78.591	90.591	0.000	0.000	2.964	.833	502.985
PARKNG	33	8821.870	135.568	147.568	0.000	0.000	14.808	48.954	534.345
PARKNG	34	3987.604	85.947	97.947	0.000	0.000	25.643	17.173	550.064
PARKNG	35	14507.351	72.183	84.183	0.000	0.000	93.196	92.291	461.971
PARKNG	36	1879.501	37.817	49.817	0.000	0.000	22.093	20.596	242.029
PARKNG	37	6162.608	80.878	92.878	0.000	0.000	41.612	28.409	517.622
PARKNG	38	1598.085	76.488	88.488	0.000	0.000	11.188	7.950	489.523
PARKNG	39	1026.298	75.524	87.524	0.000	0.000	5.948	6.696	480.532
PARKNG	40	1271.647	100.719	112.719	0.000	0.000	11.282	0.000	644.603
PARKNG	41	3048.024	102.592	114.592	0.000	0.000	15.970	11.872	656.588
PARKNG	42	791.287	22.173	34.173	0.000	0.000	13.995	14.119	141.767
PARKNG	43	40966.466	55.939	67.939	0.000	0.000	340.962	318.236	358.010
PARKNG	44	2228.601	300.680	312.680	0.000	0.000	3.611	3.657	1923.345

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1300 CALIBRATE   PERIOD FROM 1100. TO 1200. HOURS

H.4. LINK TO LINK TRAVEL TIMES(SECONDS)

LINK	TRAVEL TIMES			LINK	TRAVEL TIMES			LINK	TRAVEL TIMES			LINK	TRAVEL TIMES			LINK	TRAVEL TIMES			LINK	TRAVEL TIMES		
1	13.	13.	13.	2	12.	12.	12.	3	13.	13.	13.	4	12.	12.	12.	5	14.	14.	14.	6	12.	12.	12.
7	22.	22.	22.	8	26.	26.	26.	9	14.	14.	14.	10	14.	14.	14.	11	24.	24.	24.	12	24.	24.	24.
13	10.	10.	10.	14	10.	10.	10.	15	10.	10.	10.	16	10.	10.	10.	17	10.	10.	10.	18	14.	14.	14.
19	24.	24.	24.	20	25.	25.	25.	21	12.	12.	12.	22	14.	14.	14.	23	10.	10.	10.	24	14.	14.	14.
25	24.	24.	24.	26	21.	21.	21.	27	12.	12.	12.	28	12.	12.	12.	29	23.	23.	23.	30	23.	23.	23.
31	22.	22.	22.	32	21.	21.	21.	33	21.	21.	21.	34	22.	22.	22.	35	22.	22.	22.	36	21.	21.	21.
37	12.	12.	12.	38	12.	12.	12.	39	22.	22.	22.	40	20.	20.	20.	41	22.	22.	22.	42	20.	20.	20.
43	21.	21.	21.	44	22.	22.	22.	45	18.	18.	18.	46	17.	17.	17.	47	19.	19.	19.	48	19.	19.	19.
49	38.	38.	38.	50	37.	37.	37.	51	4.	4.	4.	52	5.	5.	5.	53	10.	10.	10.	54	14.	14.	14.
55	7.	7.	7.	56	8.	8.	8.	57	11.	11.	11.	58	15.	15.	15.	59	25.	25.	25.	60	25.	25.	25.
61	20.	20.	20.	62	20.	20.	20.	63	21.	21.	21.	64	21.	21.	21.	65	21.	21.	21.	66	25.	25.	25.
67	19.	19.	19.	68	19.	19.	19.	69	35.	35.	35.	70	34.	34.	34.	71	10.	10.	10.	72	10.	10.	10.
73	11.	11.	11.	74	11.	11.	11.	75	30.	30.	30.	76	30.	30.	30.	77	21.	21.	21.	78	21.	21.	21.
79	7.	7.	7.	80	7.	7.	7.	81	10.	10.	10.	82	10.	10.	10.	83	7.	7.	7.	84	7.	7.	7.
85	24.	24.	24.	86	24.	24.	24.	87	9.	9.	9.	88	9.	9.	9.	89	9.	9.	9.	90	9.	9.	9.
91	9.	9.	9.	92	9.	9.	9.	93	28.	28.	28.	94	26.	26.	26.	95	46.	46.	46.	96	46.	46.	46.
97	44.	44.	44.	98	43.	43.	43.	99	43.	43.	43.	100	43.	43.	43.	101	8.	8.	8.	102	8.	8.	8.
103	9.	9.	9.	104	8.	8.	8.	105	12.	12.	12.	106	12.	12.	12.	107	21.	21.	21.	108	21.	21.	21.
109	5.	5.	5.	110	4.	4.	4.	111	11.	11.	11.	112	16.	16.	16.	113	26.	26.	26.	114	21.	21.	21.
115	11.	11.	11.	116	11.	11.	11.	117	105.	105.	105.	118	106.	106.	106.	119	22.	22.	22.	120	21.	21.	21.
121	11.	11.	11.	122	11.	11.	11.	123	21.	21.	21.	124	24.	24.	24.	125	11.	11.	11.	126	11.	11.	11.
127	15.	15.	15.	128	15.	15.	15.	129	11.	11.	11.	130	16.	16.	16.	131	10.	10.	10.	132	17.	17.	17.
133	9.	9.	9.	134	10.	10.	10.	135	10.	10.	10.	136	11.	11.	11.	137	11.	11.	11.	138	10.	10.	10.
139	48.	48.	48.	140	49.	49.	49.	141	27.	27.	27.	142	31.	31.	31.	143	18.	18.	18.	144	18.	18.	18.
145	7.	7.	7.	146	9.	9.	9.	147	10.	10.	10.	148	10.	10.	10.	149	17.	17.	17.	150	17.	17.	17.
151	21.	21.	21.	152	21.	21.	21.	153	29.	29.	29.	154	33.	33.	33.	155	8.	8.	8.	156	12.	12.	12.
157	57.	57.	57.	158	57.	57.	57.	159	15.	15.	15.	160	10.	10.	10.	161	41.	41.	41.	162	41.	41.	41.
163	212.	212.	212.	164	212.	212.	212.	165	172.	172.	172.	166	172.	172.	172.	167	20.	20.	20.	168	23.	23.	23.
169	151.	151.	151.	170	143.	143.	143.	171	49.	49.	49.	172	46.	46.	46.	173	16.	16.	16.	174	16.	16.	16.
175	10.	10.	10.	176	10.	10.	10.	177	10.	10.	10.	178	11.	11.	11.	179	14.	14.	14.	180	11.	11.	11.
181	11.	11.	11.	182	12.	12.	12.	183	61.	61.	61.	184	63.	63.	63.	185	10.	10.	10.	186	9.	9.	9.
187	7.	7.	7.	188	7.	7.	7.	189	17.	17.	17.	190	18.	18.	18.	191	12.	12.	12.	192	12.	12.	12.
193	22.	22.	22.	194	18.	18.	18.	195	14.	14.	14.	196	10.	10.	10.	197	10.	10.	10.	198	10.	10.	10.
199	17.	17.	17.	200	17.	17.	17.	201	9.	9.	9.	202	11.	11.	11.	203	10.	10.	10.	204	7.	7.	7.
205	11.	11.	11.	206	11.	11.	11.	207	15.	15.	15.	208	10.	10.	10.	209	8.	8.	8.	210	8.	8.	8.
211	8.	8.	8.	212	8.	8.	8.	213	13.	13.	13.	214	9.	9.	9.	215	15.	15.	15.	216	10.	10.	10.
217	12.	12.	12.	218	11.	11.	11.	219	9.	9.	9.	220	12.	12.	12.	221	9.	9.	9.	222	11.	11.	11.
223	2.	2.	2.	224	3.	3.	3.	225	9.	9.	9.	226	12.	12.	12.	227	9.	9.	9.	228	9.	9.	9.
229	12.	12.	12.	230	10.	10.	10.	231	9.	9.	9.	232	9.	9.	9.	233	19.	19.	19.	234	19.	19.	19.
235	17.	17.	17.	236	17.	17.	17.	237	102.	102.	102.	238	107.	107.	107.	239	80.	80.	80.	240	80.	80.	80.

I.1. NETWORK SUMMARY PARAMETERS FOR TIME PERIOD

TOTAL TRAVEL TIME ON NETWORK	71.	(VEH-HRS)
TOTAL RUNNING TIME IN PARKING ZONES	73.	(VEH-HRS)
TOTAL VEHICLE MILES TRAVELED ON NETWORK	1603.	(VEH-MI)
TOTAL INTERSECTION DELAY ON NETWORK	5.	(VEH-HRS)
TOTAL STOPS AT INTERSECTIONS	4818.	(VEH)
TOTAL OF INTERSECTION AVERAGE QUEUE LENGTHS	249.	(M)

BATS MODEL
WILLIAMS AFB
1300 CALIB
29 09 78

TABLE OF CONTENTS

(IPFLG(3)>=4)

2. VEHICLE COUNT, TYPE AND HOT/COLD STARTS (IPFLG(3)>0)

H. TRAFFIC FLOW ANALYSIS

1. LINK COUNTS (IPFLG(3)=0)

2. INTERSECTION DELAYS AND QUEUEING

3. PARKING LOT TRAVEL TIMES AND DELAYS

4. LINK TO LINK TRAVEL TIMES

I. SUMMARY

1. NETWORK SUMMARY PARAMETERS FOR TIME PERIOD

POSSIBLE REPETITION OF A THROUGH I FOR EACH TIME PERIOD.

INTRODUCTION

THE U.S. AIR FORCE THROUGH A CONTRACTURAL ARRANGEMENT HAS DEVELOPED AN AIR BASE MOTOR VEHICLE MODEL THAT WILL SIMULATE A BASE TRAFFIC NETWORK USING AVAILABLE LAND USE, EMPLOYMENT, AND ENGINEERING DATA. THE MODEL WILL GRAPHICALLY REPRESENT AIR BASE MOTOR VEHICLE OPERATION ON VOLUME/FLOW MAPS, AND WILL OUTPUT A FILE OF TRAFFIC FLOWS FOR INPUT TO THE AQAM (AIR QUALITY ASSESSMENT) MODEL.1

A.1. INPUT LISTING: OF EACH DATA CARD - WITH MODIFICATIONS MADE BY SUBROUTINE INPT.

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78/ 9/29      WILLIAMS AFB          11-1200  PREDICTIVE RUN - ONE WAY STREETS
1 240  62  50  50   9   1  -0    1   2   0******00. 6.3600.  -0.  -0.133*1*91377
2  1     1*644.*358.*778.*358.  -0  25.   55    7   10  -0.   3.04785323.2*29.5
2  2     1*644.*358.*778.*358.  -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2  3     1*641.*245.*778.*245.  -0  25.   79    9   12  -0.   3.04785323.2*29.5
2  4     1*641.*245.*778.*245.  -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2  5     1*638.*023.*775.*023.  -0  25.  101   11  173  -0.   3.04785323.2*29.5
2  6     1*638.*023.*775.*023.  -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2  7     1*644.*358.*647.*602.  -0  25.   73   -0   -0  -0.   3.04785323.2*29.5
2  8     1*644.*358.*647.*602.  -0  25.   10   55    2  -0.   3.04785323.2*29.5
2  9     1*641.*245.*644.*358.  -0  25.    7    2   55  -0.   3.04785323.2*29.5
2 10     1*641.*245.*644.*358.  -0  25.   12   79    4  -0.   3.04785323.2*29.5
2 11     1*641.*245.*641.*026.  -0  25.    9    4   79  -0.   3.04785323.2*29.5
2 12     1*641.*245.*641.*026.  -0  25.  173  101    6  -0.   3.04785323.2*29.5
2 13     1*564.*687.*564.*580.  -0  25.   29   74   31  -0.   3.04785323.2*29.5
2 14     1*564.*687.*564.*580.  -0  25.  176   33   -0  -0.   3.04785323.2*29.5
2 15     1*568.*358.*568.*465.  -0  25.  175   -0   35  -0.   3.04785323.2*29.5
2 16     1*568.*358.*568.*465.  -0  25.   18  185   56  -0.   3.04785323.2*29.5
2 17     1*568.*245.*568.*358.  -0  25.   15   56  185  -0.   3.04785323.2*29.5
2 18     1*568.*245.*568.*358.  -0  25.   20  177   80  -0.   3.04785323.2*29.5
2 19     1*568.*245.*564.*023.  -0  25.   17   80  177  -0.   3.04785323.2*29.5
2 20     1*568.*245.*564.*023.  -0  25.  180  181  102  -0.   3.04785323.2*29.5
2 21     1*568.*916.*464.*828.  -0  25.   47  183   -0  -0.   3.04785323.2*29.5
2 22     1*568.*916.*464.*828.  -0  25.  179  174   44  -0.   3.04785323.2*29.5
2 23     1*464.*358.*458.*245.  -0  25.   -0  186   37  -0.   3.04785323.2*29.5
2 24     1*464.*358.*458.*245.  -0  25.   26   39  178  -0.   3.04785323.2*29.5
2 25     1*455.*245.*455.*026.  -0  25.   23  178   39  -0.   3.04785323.2*29.5
2 26     1*455.*245.*455.*026.  -0  25.   -0   41  182  -0.   3.04785323.2*29.5
2 27     1*479.*964.*388.*870.  -0  25.  187   -0   30  -0.   3.04785323.2*29.5
2 28     1*479.*964.*388.*870.  -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2 29     1*564.*687.*388.*870.  -0  25.   -0   28  187  -0.   3.04785323.2*29.5
2 30     1*564.*687.*388.*870.  -0  25.   14   31   74  -0.   3.04785323.2*29.5
2 31     1*564.*687.*336.*690.  -0  25.  189  191   54  -0.   3.04785323.2*29.5
2 32     1*564.*687.*336.*690.  -0  25.   74   14   29  -0.   3.04785323.2*29.5
2 33     1*564.*580.*336.*583.  -0  25.  193   53  196  -0.   3.04785323.2*29.5
2 34     1*564.*580.*336.*583.  -0  25.   -0  176   13  -0.   3.04785323.2*29.5
2 35     1*568.*471.*333.*471.  -0  25.   -0  195  198  -0.   3.04785323.2*29.5
2 36     1*568.*471.*333.*471.  -0  25.   -0   16  175  -0.   3.04785323.2*29.5
2 37     1*464.*358.*336.*358.  -0  25.  103  197   -0  -0.   3.04785323.2*29.5
2 38     1*464.*358.*336.*358.  -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2 39     1*458.*245.*235.*245.  -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2 40     1*458.*245.*235.*245.  -0  25.  178   26   23  -0.   3.04785323.2*29.5
2 41     1*452.*023.*235.*026.  -0  25.  205   59  208  -0.   3.04785323.2*29.5
2 42     1*452.*023.*235.*026.  -0  25.  182   -0   25  -0.   3.04785323.2*29.5
2 43     1*955.*586.*955.*361.  -0  25.   -0   78  199  -0.   3.04785323.2*29.5
2 44     1*568.*916.*327.*916.  -0  25.  209   -0  212  -0.   3.04785323.2*29.5
2 45     1*327.*828.*138.*797.  -0  25.   -0  217   68  -0.   3.04785323.2*29.5
2 46     1*327.*828.*138.*797.  -0  25.  184   -0  211  -0.   3.04785323.2*29.5
2 47     1*464.*828.*318.*672.  -0  25.   -0   -0   50  -0.   3.04785323.2*29.5
2 48     1*464.*828.*318.*672.  -0  25.   22   -0  183  -0.   3.04785323.2*29.5
2 49     1*318.*672.*543.*325.  -0  25.   -0   48   -0  -0.   3.04785323.2*29.5
2 50     1*318.*672.*543.*325.  -0  25.   -0   -0  240  -0.   3.04785323.2*29.5
2 51     1*769.*364.*815.*364.  -0  25.   85   -0  122  -0.   3.04785323.2*29.5
2 52     1*769.*364.*815.*364.  -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2 53     1*336.*690.*336.*583.  -0  25.  191   32  189  -0.   3.04785323.2*29.5
2 54     1*336.*690.*336.*583.  -0  25.  196  193   34  -0.   3.04785323.2*29.5
2 55     1*644.*358.*568.*358.  -0  25.  185   15   18  -0.   3.04785323.2*29.5
2 56     1*644.*358.*568.*358.  -0  25.   -0   -0   -0  -0.   3.04785323.2*29.5
2 57     1*238.*358.*235.*245.  -0  25.   -0  104   71  -0.   3.04785323.2*29.5
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2 58	1*238.*358.*235.*245.	-0	25.	60	201	40	-0.	3.04785323.2*29.5
2 59	1*235.*245.*235.*026.	-0	25.	57	40	201	-0.	3.04785323.2*29.5
2 60	1*235.*245.*235.*026.	-0	25.	208	205	42	-0.	3.04785323.2*29.5
2 61	1*147.*913.*147.*690.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 62	1*147.*913.*147.*690.	-0	25.	222	75	190	-0.	3.04785323.2*29.5
2 63	1*144.*586.*141.*361.	-0	25.	221	194	77	-0.	3.04785323.2*29.5
2 64	1*144.*586.*141.*361.	-0	25.	-0	81	72	-0.	3.04785323.2*29.5
2 65	1*141.*245.*141.*026.	-0	25.	-0	202	87	-0.	3.04785323.2*29.5
2 66	1*141.*245.*141.*026.	-0	25.	216	219	206	-0.	3.04785323.2*29.5
2 67	1*138.*797.*138.*587.	-0	25.	217	46	-0	-0.	3.04785323.2*29.5
2 68	1*138.*797.*138.*587.	-0	25.	70	99	-0	-0.	3.04785323.2*29.5
2 69	1*138.*587.*138.*203.	-0	25.	67	-0	99	-0.	3.04785323.2*29.5
2 70	1*138.*587.*138.*203.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 71	1*244.*358.*141.*361.	-0	25.	81	63	-0	-0.	3.04785323.2*29.5
2 72	1*244.*358.*141.*361.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 73	1*564.*687.*647.*602.	-0	25.	31	29	14	-0.	3.04785323.2*29.5
2 74	1*564.*687.*647.*602.	-0	25.	8	-0	-0	-0.	3.04785323.2*29.5
2 75	1*147.*690.*812.*693.	-0	25.	-0	117	136	-0.	3.04785323.2*29.5
2 76	1*147.*690.*812.*693.	-0	25.	190	222	61	-0.	3.04785323.2*29.5
2 77	1*955.*586.*144.*586.	-0	25.	199	-0	-0	-0.	3.04785323.2*29.5
2 78	1*955.*586.*144.*586.	-0	25.	194	64	221	-0.	3.04785323.2*29.5
2 79	1*641.*245.*568.*245.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 80	1*641.*245.*568.*245.	-0	25.	4	12	9	-0.	3.04785323.2*29.5
2 81	1*141.*358.*028.*361.	-0	25.	83	-0	106	-0.	3.04785323.2*29.5
2 82	1*141.*361.*028.*361.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 83	1*028.*361.*955.*364.	-0	25.	133	43	112	-0.	3.04785323.2*29.5
2 84	1*028.*361.*955.*364.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 85	1*769.*364.*510.*361.	-0	25.	147	145	-0	-0.	3.04785323.2*29.5
2 86	1*769.*364.*510.*361.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 87	1*049.*245.*141.*245.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 88	1*049.*245.*141.*245.	-0	25.	202	66	-0	-0.	3.04785323.2*29.5
2 89	1*860.*251.*769.*251.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 90	1*860.*251.*769.*251.	-0	25.	226	-0	115	-0.	3.04785323.2*29.5
2 91	1*671.*251.*577.*251.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2 92	1*671.*251.*577.*251.	-0	25.	228	124	-0	-0.	3.04785323.2*29.5
2 93	1*952.*026.*665.*032.	-0	25.	229	123	160	-0.	3.04785323.2*29.5
2 94	1*952.*026.*665.*032.	-0	25.	232	-0	113	-0.	3.04785323.2*29.5
2 95	1*138.*919.*668.*919.	-0	25.	155	159	126	-0.	3.04785323.2*29.5
2 96	1*138.*919.*668.*919.	-0	25.	214	218	215	-0.	3.04785323.2*29.5
2 97	1*138.*797.*662.*800.	-0	25.	-0	125	234	-0.	3.04785323.2*29.5
2 98	1*138.*797.*662.*800.	-0	25.	46	68	217	-0.	3.04785323.2*29.5
2 99	1*662.*590.*138.*587.	-0	25.	236	233	128	-0.	3.04785323.2*29.5
2100	1*662.*590.*138.*587.	-0	25.	-0	70	67	-0.	3.04785323.2*29.5
2101	1*638.*023.*564.*023.	-0	25.	181	19	180	-0.	3.04785323.2*29.5
2102	1*638.*023.*564.*023.	-0	25.	6	173	11	-0.	3.04785323.2*29.5
2103	1*244.*358.*336.*358.	-0	25.	71	-0	58	-0.	3.04785323.2*29.5
2104	1*244.*358.*336.*358.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2105	1*028.*361.*028.*245.	-0	25.	-0	82	83	-0.	3.04785323.2*29.5
2106	1*028.*361.*028.*245.	-0	25.	-0	203	224	-0.	3.04785323.2*29.5
2107	1*049.*245.*043.*026.	-0	25.	-0	88	223	-0.	3.04785323.2*29.5
2108	1*049.*245.*043.*026.	-0	25.	-0	231	220	-0.	3.04785323.2*29.5
2109	1*815.*364.*860.*364.	-0	25.	51	119	-0	-0.	3.04785323.2*29.5
2110	1*815.*364.*860.*364.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2111	1*955.*364.*955.*248.	-0	25.	43	84	133	-0.	3.04785323.2*29.5
2112	1*955.*364.*955.*248.	-0	25.	114	225	204	-0.	3.04785323.2*29.5
2113	1*955.*248.*952.*026.	-0	25.	111	204	225	-0.	3.04785323.2*29.5
2114	1*955.*248.*952.*026.	-0	25.	-0	93	232	-0.	3.04785323.2*29.5
2115	1*860.*251.*860.*364.	-0	25.	-0	134	109	-0.	3.04785323.2*29.5
2116	1*860.*251.*860.*364.	-0	25.	-0	89	226	-0.	3.04785323.2*29.5
2 17	1*812.*693.*818.*867.	-0	25.	-0	164	-0	-0.	3.04785323.2*29.5
2118	1*812.*693.*818.*867.	-0	25.	136	-0	76	-0.	3.04785323.2*29.5

2119	1*815.*590.*815.*364.	-0	25.	135	200	141	-0.	3.04785323.2*29.5
2120	1*815.*590.*815.*364.	-0	25.	-0	51	110	-0.	3.04785323.2*29.5
2121	1*769.*361.*769.*251.	-0	25.	-0	52	85	-0.	3.04785323.2*29.5
2122	1*769.*361.*769.*251.	-0	25.	-0	227	90	-0.	3.04785323.2*29.5
2123	1*665.*032.*671.*251.	-0	25.	-0	228	91	-0.	3.04785323.2*29.5
2124	1*665.*032.*671.*251.	-0	25.	160	229	94	-0.	3.04785323.2*29.5
2125	1*668.*922.*662.*800.	-0	25.	159	96	155	-0.	3.04785323.2*29.5
2126	1*668.*922.*662.*800.	-0	25.	234	-0	98	-0.	3.04785323.2*29.5
2127	1*662.*590.*668.*422.	-0	25.	233	100	236	-0.	3.04785323.2*29.5
2128	1*662.*590.*668.*422.	-0	25.	-0	129	-0	-0.	3.04785323.2*29.5
2129	1*668.*422.*559.*361.	-0	25.	130	-0	-0	-0.	3.04785323.2*29.5
2130	1*559.*361.*565.*187.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2131	1*769.*364.*668.*422.	-0	25.	129	127	-0	-0.	3.04785323.2*29.5
2132	1*769.*364.*769.*178.	-0	25.	-0	-0	131	-0.	3.04785323.2*29.5
2133	1*955.*364.*860.*361.	-0	25.	109	-0	116	-0.	3.04785323.2*29.5
2134	1*955.*364.*860.*361.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2135	1*812.*693.*815.*590.	-0	25.	117	76	-0	-0.	3.04785323.2*29.5
2136	1*812.*693.*815.*590.	-0	25.	120	141	200	-0.	3.04785323.2*29.5
2137	1*574.*925.*577.*032.	-0	25.	151	230	153	-0.	3.04785323.2*29.5
2138	1*574.*925.*577.*032.	-0	25.	-0	157	156	-0.	3.04785323.2*29.5
2139	1*519.*593.*550.*123.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2140	1*519.*593.*550.*123.	-0	25.	144	-0	142	-0.	3.04785323.2*29.5
2141	1*815.*590.*519.*593.	-0	25.	-0	139	144	-0.	3.04785323.2*29.5
2142	1*815.*590.*519.*593.	-0	25.	200	120	135	-0.	3.04785323.2*29.5
2143	1*443.*413.*519.*593.	-0	25.	139	142	-0	-0.	3.04785323.2*29.5
2144	1*443.*413.*519.*593.	-0	25.	-0	-0	146	-0.	3.04785323.2*29.5
2145	1*510.*364.*443.*413.	-0	25.	-0	143	-0	-0.	3.04785323.2*29.5
2146	1*510.*364.*443.*413.	-0	25.	-0	147	86	-0.	3.04785323.2*29.5
2147	1*412.*315.*510.*364.	-0	25.	171	-0	150	-0.	3.04785323.2*29.5
2148	1*412.*315.*510.*364.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2149	1*577.*251.*412.*315.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2150	1*577.*251.*412.*315.	-0	25.	92	152	-0	-0.	3.04785323.2*29.5
2151	1*577.*032.*577.*251.	-0	25.	-0	92	149	-0.	3.04785323.2*29.5
2152	1*577.*032.*577.*251.	-0	25.	138	153	230	-0.	3.04785323.2*29.5
2153	1*577.*032.*257.*035.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2154	1*577.*032.*257.*035.	-0	25.	230	138	151	-0.	3.04785323.2*29.5
2155	1*668.*922.*574.*925.	-0	25.	157	137	-0	-0.	3.04785323.2*29.5
2156	1*668.*922.*574.*925.	-0	25.	96	126	159	-0.	3.04785323.2*29.5
2157	1*574.*925.*269.*361.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2158	1*574.*925.*269.*361.	-0	25.	156	-0	137	-0.	3.04785323.2*29.5
2159	1*668.*922.*665.*032.	-0	25.	123	94	229	-0.	3.04785323.2*29.5
2160	1*668.*922.*665.*032.	-0	25.	126	155	96	-0.	3.04785323.2*29.5
2161	1*470.*593.*361.*151.	-0	25.	-0	235	-0	-0.	3.04785323.2*29.5
2162	1*470.*593.*361.*151.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2163	1*818.*867.*186.*867.	-0	25.	-0	-0	118	-0.	3.04785323.2*29.5
2164	1*818.*867.*186.*867.	-0	25.	166	-0	-0	-0.	3.04785323.2*29.5
2165	1*186.*867.*557.*519.	-0	25.	163	-0	-0	-0.	3.04785323.2*29.5
2166	1*186.*867.*557.*519.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2167	2*916.*315.*696.*312.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2168	2*916.*315.*696.*312.	-0	25.	172	237	170	-0.	3.04785323.2*29.5
2169	2*916.*315.*105.*906.	-0	25.	237	167	172	-0.	3.04785323.2*29.5
2170	2*916.*315.*105.*906.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2171	2*916.*315.*412.*315.	-0	25.	167	170	237	-0.	3.04785323.2*29.5
2172	2*916.*315.*412.*315.	-0	25.	150	-0	148	-0.	3.04785323.2*29.5
2173	1*638.*023.*568.*916.	-0	25.	44	179	21	-0.	3.04785323.2*29.5
2174	1*638.*023.*568.*916.	-0	25.	11	6	101	-0.	3.04785323.2*29.5
2175	1*564.*580.*564.*468.	-0	25.	13	-0	33	-0.	3.04785323.2*29.5
2176	1*564.*580.*564.*468.	-0	25.	16	35	-0	-0.	3.04785323.2*29.5
2177	1*568.*245.*455.*245.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2178	1*568.*245.*455.*245.	-0	25.	80	20	17	-0.	3.04785323.2*29.5
2179	1*568.*916.*564.*023.	-0	25.	19	102	181	-0.	3.04785323.2*29.5

2180	1*568.*916.*564.*023.	-0	25.	21	44	-0	-0.	3.04785323.2*29.5
2181	1*564.*023.*452.*023.	-0	25.	41	25	-0	-0.	3.04785323.2*29.5
2182	1*564.*023.*452.*023.	-0	25.	102	180	19	-0.	3.04785323.2*29.5
2183	1*464.*828.*327.*828.	-0	5.	45	211	-0	-0.	3.04785323.2*29.5
2184	1*464.*828.*327.*828.	-0	5.	-0	47	22	-0.	3.04785323.2*29.5
2185	1*568.*358.*464.*358.	-0	25.	37	-0	24	-0.	3.04785323.2*29.5
2186	1*568.*358.*464.*358.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2187	1*388.*870.*336.*818.	-0	25.	-0	-0	192	-0.	3.04785323.2*29.5
2188	1*388.*870.*336.*818.	-0	25.	28	30	-0	-0.	3.04785323.2*29.5
2189	1*336.*690.*147.*690.	-0	25.	75	61	222	-0.	3.04785323.2*29.5
2190	1*336.*690.*147.*690.	-0	25.	32	54	191	-0.	3.04785323.2*29.5
2191	1*336.*818.*336.*690.	-0	25.	-0	188	-0	-0.	3.04785323.2*29.5
2192	1*336.*818.*336.*690.	-0	25.	54	189	32	-0.	3.04785323.2*29.5
2193	1*336.*583.*144.*586.	-0	25.	77	221	64	-0.	3.04785323.2*29.5
2194	1*336.*583.*144.*586.	-0	25.	34	196	53	-0.	3.04785323.2*29.5
2195	1*336.*583.*333.*471.	-0	25.	53	34	193	-0.	3.04785323.2*29.5
2196	1*336.*583.*333.*471.	-0	25.	198	-0	36	-0.	3.04785323.2*29.5
2197	1*333.*471.*336.*358.	-0	25.	195	36	-0	-0.	3.04785323.2*29.5
2198	1*333.*471.*336.*358.	-0	25.	-0	103	38	-0.	3.04785323.2*29.5
2199	1*955.*586.*815.*590.	-0	25.	141	135	120	-0.	3.04785323.2*29.5
2200	1*955.*586.*815.*590.	-0	25.	78	-0	-0	-0.	3.04785323.2*29.5
2201	1*141.*245.*235.*245.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2202	1*141.*245.*235.*245.	-0	25.	40	60	57	-0.	3.04785323.2*29.5
2203	1*028.*245.*955.*248.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2204	1*028.*245.*955.*248.	-0	25.	224	-0	105	-0.	3.04785323.2*29.5
2205	1*235.*026.*141.*026.	-0	25.	219	65	216	-0.	3.04785323.2*29.5
2206	1*235.*026.*141.*026.	-0	25.	42	208	59	-0.	3.04785323.2*29.5
2207	1*235.*026.*235.*919.	-0	25.	59	42	205	-0.	3.04785323.2*29.5
2208	1*235.*026.*235.*919.	-0	25.	-0	213	210	-0.	3.04785323.2*29.5
2209	1*327.*916.*235.*919.	-0	25.	213	207	-0	-0.	3.04785323.2*29.5
2210	1*327.*916.*235.*919.	-0	25.	-0	212	-0	-0.	3.04785323.2*29.5
2211	1*327.*916.*327.*828.	-0	25.	-0	-0	209	-0.	3.04785323.2*29.5
2212	1*327.*916.*327.*828.	-0	25.	-0	45	184	-0.	3.04785323.2*29.5
2213	1*235.*919.*138.*919.	-0	25.	95	215	218	-0.	3.04785323.2*29.5
2214	1*235.*919.*138.*919.	-0	25.	210	-0	207	-0.	3.04785323.2*29.5
2215	1*138.*919.*141.*026.	-0	25.	65	206	219	-0.	3.04785323.2*29.5
2216	1*138.*919.*141.*026.	-0	25.	218	95	214	-0.	3.04785323.2*29.5
2217	1*138.*919.*138.*797.	-0	25.	215	214	95	-0.	3.04785323.2*29.5
2218	1*138.*919.*138.*797.	-0	25.	68	97	46	-0.	3.04785323.2*29.5
2219	1*141.*026.*043.*026.	-0	25.	231	107	-0	-0.	3.04785323.2*29.5
2220	1*141.*026.*043.*026.	-0	25.	206	216	65	-0.	3.04785323.2*29.5
2221	1*147.*690.*144.*586.	-0	25.	61	190	75	-0.	3.04785323.2*29.5
2222	1*147.*690.*144.*586.	-0	25.	64	77	194	-0.	3.04785323.2*29.5
2223	1*028.*245.*049.*245.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2224	1*028.*245.*049.*245.	-0	25.	88	108	-0	-0.	3.04785323.2*29.5
2225	1*955.*248.*860.*251.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2226	1*955.*248.*860.*251.	-0	25.	204	114	111	-0.	3.04785323.2*29.5
2227	1*769.*251.*671.*251.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2228	1*769.*251.*671.*251.	-0	25.	90	-0	121	-0.	3.04785323.2*29.5
2229	1*665.*032.*577.*032.	-0	25.	153	151	138	-0.	3.04785323.2*29.5
2230	1*665.*032.*577.*032.	-0	25.	94	160	123	-0.	3.04785323.2*29.5
2231	1*952.*026.*043.*026.	-0	25.	93	113	-0	-0.	3.04785323.2*29.5
2232	1*952.*026.*043.*026.	-0	25.	220	-0	107	-0.	3.04785323.2*29.5
2233	1*662.*800.*662.*590.	-0	25.	125	98	-0	-0.	3.04785323.2*29.5
2234	1*662.*800.*662.*590.	-0	25.	128	236	100	-0.	3.04785323.2*29.5
2235	1*662.*590.*470.*593.	-0	25.	100	128	233	-0.	3.04785323.2*29.5
2236	1*662.*590.*470.*593.	-0	25.	-0	-0	162	-0.	3.04785323.2*29.5
2237	1*916.*315.*041.*187.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5
2238	1*916.*315.*041.*187.	-0	25.	170	172	167	-0.	3.04785323.2*29.5
2239	1*543.*325.*195.*940.	-0	25.	-0	49	-0	-0.	3.04785323.2*29.5
2240	1*543.*325.*195.*940.	-0	25.	-0	-0	-0	-0.	3.04785323.2*29.5

3	1	8	1	9	56	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	2	10	3	11	80	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	3	12	5	174	102	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	4	30	73	13	32	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	5	14	-0	175	34	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	6	176	-0	15	36	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	7	16	55	17	186	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	8	18	79	19	178	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	9	20	101	179	182	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	10	21	-0	48	184	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	11	180	173	22	44	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	12	-0	185	23	38	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	13	24	177	25	40	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	14	26	181	-0	42	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	15	27	-0	29	188	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	16	192	31	53	190	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	17	54	33	195	194	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	18	196	35	197	-0	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	19	198	37	-0	104	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	20	58	39	59	202	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	21	60	41	207	206	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	22	-0	77	43	200	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	23	-0	44	211	210	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	24	218	45	67	98	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	25	212	183	-0	46	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	26	239	-0	-0	50	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	27	-0	51	121	86	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	28	120	109	-0	52	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	29	-0	103	57	72	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	30	62	189	221	76	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	31	222	193	63	78	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	32	64	71	-0	82	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	33	-0	201	65	88	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	34	66	205	215	220	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	35	68	-0	69	100	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	36	118	75	135	-0	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	37	-0	81	105	84	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	38	83	-0	111	134	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	39	146	85	-0	148	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	40	-0	87	107	224	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	41	122	89	-0	228	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	42	116	225	-0	90	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	43	-0	91	151	150	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	44	-0	227	123	92	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	45	124	93	159	230	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	46	114	231	-0	94	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	47	160	95	125	156	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	48	216	213	217	96	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	49	126	97	233	-0	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	50	234	99	127	235	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	51	106	223	-0	204	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	52	108	219	-0	232	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	53	-0	133	115	110	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	54	112	203	113	226	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	55	136	199	119	142	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	56	128	-0	-0	131	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	57	152	229	137	154	-2	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	58	-0	155	138	158	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	59	140	141	143	-0	-1	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	60	147	149	-0	172	-0	-0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
3	61	169	171	238	168	2	90	13.	13.	-0.	-0.	3.	2400.	2400.	-0.	-0.

```
3 62  208  209   -0  214   -0   -0 -0. -0. -0. -0. -0.  -0.  -0.  -0.  -0.
4MS81.13. 2. 0. 0. 3.74.15. 1. 0. 0. 0.-0.-0 169 168 167 170  -0  -0  -0  -0  -0  -0  -0  -0
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4 165.25.-0. 2.-0.11. 1.99.-0.-0.-0.-0.-0. 2  48  22  47  21  -0  -0  -0  -0  -0  -0  -0  -0
4 277.17.-0.-0.-0. 6. 1.99.-0.-0.-0.-0.-0. 3-180-102   6   5 174 173  -0  -0  -0  -0  -0  -0
4 375.18. 1.-0.-0. 6. 1.99.-0.-0.-0.-0.-0. 3   6  12   4   5  11   3  -0  -0  -0  -0  -0  -0
4 474.23.-0.-0.-0. 4.66. 1.33.-0.-0.-0.-0. 3   4  10   2   3   9   1  -0  -0  -0  -0  -0  -0
4 569.23. 1.-0.-0. 8.-0.92. 8.-0.-0.-0.-0. 2   2   8   1   7  -0  -0  -0  -0  -0  -0  -0  -0
4 669.13.-0.-0.-0. 3.-0.90.-0.-0.10.-0.-0. 3  74  30  28  73  29  27  -0  -0  -0  -0  -0  -0
4 762.32.-0.-0.-0. 6.13.64. 3. 7.13.-0.-0. 6  56  16 176  14  74   8  55  15 175  13  73   7
4 872.17.-0.-0.-0. 4.13.64. 3. 7.13.-0.-0. 6 -56 -10 -80-178  24 186  23 185  -0  -0  -0  -0
4 974.12.-0.-0.-0. 2. 1.99.-0.-0.-0.-0.-0. 4 -80  12-102  20  79  11 101  19  -0  -0  -0  -0
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42684.13.-0.-0.-0. 1.-0.99.-0.-0.-0.-0.-0. 5  86 120 142-144 146  85 119 141 145  -0  -0  -0
42787.13.-0.-0.-0.-0.66.33.-0.-0.-0.-0.-0. 5-120 200  43 134-110 199 133  -0  -0  -0  -0  -0
42885. 9. 5.-0.-0. 1.13.64. 3. 7.13.-0.-0. 5  43  78  64  82  84  77  63  81  83  -0  -0  -0
42974.-0.-0.-0.-0.-0.13.64. 3. 7.13.-0.-0. 5  76 222  78-200 136  75 221  77 135  -0  -0  -0
43075.18. 1.-0.-0. 6.17.83.-0.-0.-0.-0.-0. 4 -92 124-230 152 123 151  -0  -0  -0  -0  -0  -0
43185. 9. 5.-0.-0. 1.13.64. 3. 7.13.-0.-0. 2 150 152 151 149  -0  -0  -0  -0  -0  -0  -0  -0
43285. 9. 5.-0.-0. 1.13.64. 3. 7.13.-0.-0. 4-172-150-152 154 153  -0  -0  -0  -0  -0  -0  -0
43385. 9. 5.-0.-0. 1.13.64. 3. 7.13.-0.-0. 5-172-148 146-144-140 145  -0  -0  -0  -0  -0  -0
43465. 9.-0.-0.-0. 9.13.64. 3. 7.13.-0.-0. 5 140 142 136  76  62 118 117 139 141 135  75  61
43556.34. 7. 2.-0.-0.24.37.-0.12.27.-0.-0. 2 -70  50  49  -0  -0  -0  -0  -0  -0  -0  -0  -0
43672.17.-0.-0.-0. 4.-0.50.-0.50.-0.-0.-0. 8-216-206 -42 182 180  44-210-214  -0  -0  -0  -0
43765. 9.-0.-0.-0. 9.13.64. 3. 7.13.-0.-0. 4 162-236-100  70 130 132 161  69  -0  -0  -0  -0
43865. 9.-0.-0.-0. 9.13.64. 3. 7.13.-0.-0. 4 100 234  98  68  99 233  97  67  -0  -0  -0  -0
43972.17.-0.-0.-0. 4. 1.99.-0.-0.-0.-0.-0. 4  98 218  96 126  97 217  95 125  -0  -0  -0  -0
44085. 9. 5.-0.-0. 1.13.64. 3. 7.13.-0.-0. 5-236 234-126-156-158 233  -0  -0  -0  -0  -0  -0
44165. 9.-0.-0.-0. 9.13.64. 3. 7.13.-0.-0. 4 154-138-158 160 153 159  -0  -0  -0  -0  -0  -0
44272.17.-0.-0.-0. 4.-0.99. 1.-0.-0.-0.-0. 3 230 138 126 229 137 125 155 156  -0  -0  -0  -0
44384. 8. 6.-0. 1. 1. 1.99.-0.-0.-0.-0.-0. 6 124 228  90-226 114 -94 123 227  89 113  -0  -0
44472.17.-0.-0.-0. 4.13.64. 3. 7.13.-0.-0. 1 166 165  -0  -0  -0  -0  -0  -0  -0  -0  -0  -0
5MS5*40.*00.   -0.    -0.  1206.    -0.    -0.    -0.    -0.    -0. -0.    -0.
5CH5760.760.   -0.    -0.   697.    -0.    -0.    -0.    -0.    -0. -0.    -0.
5PH5*76.*70.   -0.    -0.   138.    -0.    -0.    -0.    -0.    -0. -0.    -0.
5TM5*80.*40.   -0.    -0.   218.    -0.    -0.    -0.    -0.    -0. -0.    -0.
5OL5648.648.   -0.    -0.    81.    -0.    -0.    -0.    -0.    -0. -0.    -0.
5OT5*52.*52.   -0.    -0.   238.    -0.    -0.    -0.    -0.    -0. -0.179634.
5 17 88. -0.   69.    30.    -0.    -0.    -0.    -0.    -0.    -0. -0. 27779.
5 27116. -0.   80.    23.    -0.    -0.    -0.    -0.    -0.    -0. -0. 22187.
5 37157. -0.  340.   312.    -0.    -0.    -0.    -0.    -0.    -0. -0. 15833.
5 47170. -0.   48.    12.    -0.    -0.    -0.    -0.    -0.    -0. -0.  8378.
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5 57 75. -0.   327.    61.     -0.     -0.     -0.     -0.     -0.     -0. -0. 77560.
5 67288. -0.   244.    48.     -0.     -0.     -0.     -0.     -0.     -0. -0. 38506.
5 72102. -0.    21.    44.     -0.     -0.     -0.     -0.     -0.     -0. -0.  6833.
5 82 30. -0.    17.     3.     -0.     -0.     -0.     -0.     -0.     -0. -0.    73.
5 92120. -0.    51.     8.     -0.     -0.     -0.     -0.     -0.     -0. -0.  7169.
5102 57. -0.    48.    72.     -0.     -0.     -0.     -0.     -0.     -0. -0.    -0.
5114 70. -0.     0.     0.     -0.     -0.     -0.     -0.     -0.     -0. -0.   825.
5124 51. -0.     7.     4.     -0.     -0.     -0.     -0.     -0.      4. -0.    -0.
5132178. -0.   115.    38.     -0.     -0.     -0.     -0.     -0.     -0. -0.  4303.
5144126. -0.    21.     6.     -0.     -0.     -0.     -0.     -0.      5. -0.  1635.
5156 80. -0.     7.     8.     -0.    103.     -0.     -0.     -0.     -0. -0. 12265.
5166 38. -0.    12.    24.     -0.     -0.     -0.     -0.     -0.     -0. -0.    -0.
5176 81. -0.     5.     9.     -0.     -0.     -0.     -0.     -0.      3. -0.     6.
5184306. -0.    21.    48.     -0.     -0.     35.     -0.     -0.      3. -0.    98.
5192 20. -0.    48.    27.     -0.     -0.     -0.     -0.     -0.     -0. -0. 83235.
5202586. -0.   135.   122.     -0.     -0.     -0.     -0.     -0.     -0. -0.132471.
5214186. -0.    14.    24.     -0.     -0.     32.      3.     -0.     -0. -0.114080.
5221188. -0.     2.     2.     -0.    428.     -0.     -0.     -0.     -0. -0.    -0.
5233 85. -0.     5.    26.     -0.     -0.     -0.     24.     -0.     -0. -0.    -0.
5247195. -0.   359.   120.     -0.     -0.     -0.     -0.     -0.     -0. -0. 15833.
5256 82. -0.    56.    44.     -0.     -0.     -0.      3.     -0.     -0. -0.  7849.
5264350. -0.   184.    37.     -0.     -0.     -0.     -0.    221.     -0. -0. 53104.
5274165. -0.    40.    54.     -0.     -0.     27.     -0.     -0.     -0. -0.  8570.
5284 64. -0.     0.     0.     -0.     -0.     -0.     -0.     -0.     -0. -0.  8570.
5291217. -0.     5.     7.     -0.    216.     -0.     -0.     -0.     -0. -0.  4998.
5306 29. -0.    36.     8.     -0.     -0.     -0.     -0.     -0.     -0. -0.  6541.
5314186. -0.     6.    11.     -0.     -0.     -0.     -0.     -0.      7. -0.    -0.
5324 92. -0.     5.     1.     -0.     -0.     -0.     -0.     -0.     -0. -0.  1635.
5334 50. -0.     2.     7.     -0.     -0.      2.     -0.     -0.      3. -0.    -0.
5341300. -0.     0.     0.    152.     -0.     -0.     -0.     -0.     -0. -0.    -0.
5352592. -0.    50.    25.     -0.     -0.     -0.     -0.     -0.     -0. -0.384742.
5362  9. -0.   116.    39.     -0.     -0.     -0.     -0.     -0.      3. -0.  9442.
5371600. -0.    -0.    -0.    251.     -0.     -0.     -0.     -0.     -0. -0.    -0.
5381200. -0.    -0.    -0.     70.     -0.     -0.     -0.     -0.     -0. -0.    -0.
5392 72. -0.    12.    14.     -0.     -0.     -0.     -0.     -0.     -0. -0. 21260.
5404 70. -0.    26.    13.     -0.     -0.     -0.     -0.     -0.     -0. -0.    -0.
5411300. -0.    -0.    -0.    102.     -0.     -0.     -0.     -0.     -0. -0.    -0.
5422 72. -0.    26.    29.     -0.     -0.     -0.     -0.     -0.     -0. -0. 44972.
5433613. -0.    26.   204.     -0.     -0.      9.    161.     -0.      4. -0. 24279.
5442 50. -0.    26.    16.     -0.     -0.     -0.     -0.     -0.     -0. -0.  8512.
6HOME-WORK  .50.50* 1 .0005 .0045* 2 .0005 .0045* 3 .0049 .0005* 4 .0049 .0005
6SHOPPING   *00.103 62.48002.4800*-0*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000
6SERVICE    *00.104 7 .3300 .33004 8*.0000*.00004 53.00008.0000*-0*.0000*.0000
6EXTERNAL    .01.015 3 .1565 .1648*-0*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000
6INDUSTRIAL.50.502 1*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000
6ADMINISTER.50.506 1*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000
6FLT.LINE    .50.507 1*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000
6HOME        .50.501 1*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000
6MILITARY    .01.05010 .0003 .0003*-0*.0000*.0000*-0*.0000*.0000*-0*.0000*.0000
7      171  172 371. 366.  -0.  -0.  -0.  -0.  -0.  -0.  -0.  -0.
9 1.28 1.28 1.28 1.28 1.00 1.00 1.28 1.28 1.28 1.28 1.00 1.00-0.00 600.
10 14 5171149151229 93231219205207209 44 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0
10 14 5172150152230 94232220206 42182 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0
T1=   3.956     T2=  12.421     T2-T1=   8.465
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B. INITIALIZATION WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE WAY STREETS

B.1. ZONE PARKING CAPACITIES AND TRIP LENGTHS

ZONE	CAPACITY	LENGTH	TRAVEL TIME	ALTERNATE TRAVEL TIME
MS	-0.	1603.	1440.	1800.
CH	-0.	223.	760.	760.
PH	-0.	1604.	2376.	2970.
TM	-0.	1603.	2080.	2340.
GL	-0.	222.	648.	648.
GT	-0.	1604.	2952.	2952.
1	88.	227.	36.	36.
2	116.	165.	26.	26.
3	157.	243.	38.	38.
4	170.	179.	28.	28.
5	75.	254.	40.	40.
6	288.	292.	46.	46.
7	102.	258.	40.	40.
8	30.	122.	19.	19.
9	120.	241.	38.	38.
10	57.	231.	36.	36.
11	70.	233.	36.	36.
12	61.	242.	38.	38.
13	178.	260.	41.	41.
14	126.	244.	38.	38.
15	60.	232.	36.	36.
16	38.	225.	35.	35.
17	61.	137.	21.	21.
18	306.	268.	42.	42.
19	20.	244.	38.	38.
20	586.	511.	80.	80.
21	186.	248.	39.	39.
22	188.	251.	39.	39.
23	85.	140.	22.	22.
24	195.	904.	141.	141.
25	82.	139.	22.	22.
26	350.	335.	52.	52.
27	165.	250.	39.	39.
28	64.	235.	37.	37.
29	217.	357.	56.	56.
30	29.	224.	35.	35.
31	186.	248.	39.	39.
32	92.	503.	79.	79.
33	50.	534.	83.	83.
34	300.	550.	86.	86.
35	592.	462.	72.	72.
36	9.	242.	38.	38.
37	600.	518.	81.	81.
38	200.	490.	76.	76.
39	72.	481.	75.	75.
40	70.	645.	101.	101.
41	300.	657.	103.	103.
42	72.	142.	22.	22.
43	613.	358.	56.	56.
44	50.	1923.	301.	301.

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO 1200. HOURS

C.1. ARRAY OF LAND USE PRODUCTIONS AND ATTRACTIONS

FROM/TO	HOME	INDS	SHOP	SERV	EXTN	ADMN	FLTL
HOME	175.	7.	95.	354.	150.	13.	88.
INDS	8.	3.	13.	74.	5.	4.	13.
SHOP	65.	9.	59.	157.	87.	21.	62.
SERV	142.	30.	101.	246.	150.	39.	49.
EXTN	119.	4.	69.	186.	0.	7.	19.
ADMN	13.	4.	31.	96.	9.	1.	35.
FLTL	86.	12.	92.	123.	24.	33.	12.

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO 1200. HOURS

C.2. TRIP PRODUCTIONS (PERSONS)

FROM		PURPOSE									
ZONE	USE	HOME-W	SHOPPI	SERVIC	EXTERN	INDUST	ADMINI	FLT.LI	HOME	MILITA	TOTAL
MS	EXTN	6	16	44	0	1	2	4	28	0	101
CH	EXTN	3	9	25	0	1	1	3	16	0	58
PH	EXTN	1	2	5	0	0	0	1	3	0	12
TM	EXTN	1	3	8	0	0	0	1	5	0	18
GL	EXTN	0	1	3	0	0	0	0	2	0	6
OT	EXTN	1	38	102	0	2	4	10	65	57	279
1	FLTL	0	7	9	2	1	3	1	7	9	39
2	FLTL	0	6	8	2	1	2	1	6	7	33
3	FLTL	0	25	34	7	3	9	3	24	5	110
4	FLTL	0	3	4	1	0	1	0	3	3	15
5	FLTL	0	21	29	6	3	8	3	20	25	115
6	FLTL	0	13	18	3	2	5	2	12	12	67
7	INDS	0	0	3	0	0	0	0	0	2	5
8	INDS	0	0	1	0	0	0	0	0	0	1
9	INDS	0	0	2	0	0	0	0	0	2	4
10	INDS	0	1	4	0	0	0	1	0	0	6
11	SERV	0	0	0	0	0	0	0	0	0	0
12	SERV	0	3	8	5	1	1	2	5	0	25
13	INDS	0	1	5	0	0	0	1	1	1	9
14	SERV	0	5	12	7	1	2	2	7	1	37
15	ADMN	1	8	26	2	1	0	9	3	4	54
16	ADMN	0	2	6	1	0	0	2	1	0	12
17	ADMN	0	6	18	2	1	0	7	2	0	36
18	SERV	0	11	28	17	3	4	6	16	0	85
19	INDS	0	1	5	0	0	0	1	0	27	34
20	INDS	0	2	12	1	0	1	2	1	42	61
21	SERV	0	30	74	45	9	12	15	42	37	264
22	HOME	2	22	83	35	2	3	21	41	0	209
23	SHOP	0	4	11	6	1	1	4	4	0	31
24	FLTL	0	16	21	4	2	6	2	15	5	71
25	ADMN	0	12	36	3	1	1	13	5	3	74
26	SERV	0	29	71	43	9	11	14	41	17	235
27	SERV	0	11	26	16	3	4	5	15	3	83
28	SERV	0	1	2	1	0	0	0	1	3	8
29	HOME	1	54	200	85	4	7	50	99	2	502
30	ADMN	0	3	10	1	0	0	4	1	2	21
31	SERV	0	6	14	8	2	2	3	8	0	43
32	SERV	0	0	1	1	0	0	0	1	1	4
33	SERV	0	3	7	4	1	1	1	4	0	21
34	HOME	1	5	19	8	0	1	5	9	0	48
35	INDS	0	2	13	1	0	1	2	1	123	143
36	INDS	0	4	24	2	1	1	4	3	3	42
37	HOME	1	8	31	13	1	1	8	15	0	78
38	HOME	0	2	9	4	0	0	2	4	0	21
39	INDS	0	0	1	0	0	0	0	0	7	8
40	SERV	0	2	5	3	1	1	1	3	0	16
41	HOME	0	3	13	5	0	0	3	6	0	30
42	INDS	0	1	3	0	0	0	1	0	14	19
43	SHOP	0	55	147	81	8	19	58	60	8	436
44	INDS	0	0	2	0	0	0	0	0	3	5
TOTAL		18	457	1242	425	66	115	278	605	428	3634

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO 1200. HOURS

C.3. TRIP ATTRACTIONS (PERSONS)

TO ZONE	USE	PURPOSE HOME-W	SHOPPI	SERVIC	EXTERN	INDUST	ADMINI	FLT.LI	HOME	MILITA	TOTAL
MS	EXTN	1	0	0	199	0	0	0	0	0	200
CH	EXTN	0	0	0	115	0	0	0	0	0	115
PH	EXTN	0	0	0	23	0	0	0	0	0	23
TM	EXTN	0	0	0	36	0	0	0	0	0	36
GL	EXTN	0	0	0	13	0	0	0	0	0	13
OT	EXTN	0	0	0	39	0	0	0	0	57	96
1	FLTL	0	0	0	0	0	0	32	0	9	41
2	FLTL	0	0	0	0	0	0	27	0	7	34
3	FLTL	3	0	0	0	0	0	112	0	5	120
4	FLTL	0	0	0	0	0	0	13	0	3	16
5	FLTL	1	0	0	0	0	0	96	0	25	122
6	FLTL	1	0	0	0	0	0	59	0	12	72
7	INDS	0	0	0	0	4	0	0	0	2	6
8	INDS	0	0	0	0	1	0	0	0	0	1
9	INDS	0	0	0	0	3	0	0	0	2	5
10	INDS	0	0	0	0	7	0	0	0	0	7
11	SERV	0	0	0	0	0	0	0	0	0	0
12	SERV	0	0	72	0	0	0	0	0	0	72
13	INDS	1	0	0	0	7	0	0	0	1	9
14	SERV	0	0	90	0	0	0	0	0	1	91
15	ADMN	0	0	0	0	0	49	0	0	4	53
16	ADMN	0	0	0	0	0	11	0	0	0	11
17	ADMN	0	0	0	0	0	35	0	0	0	35
18	SERV	0	0	334	0	0	0	0	0	0	334
19	INDS	0	0	0	0	7	0	0	0	27	34
20	INDS	2	0	0	0	19	0	0	0	42	63
21	SERV	0	0	256	0	0	0	0	0	37	293
22	HOME	0	0	0	0	0	0	0	142	0	142
23	SHOP	0	60	0	0	0	0	0	0	0	60
24	FLTL	3	0	0	0	0	0	71	0	5	79
25	ADMN	0	0	0	0	0	69	0	0	3	72
26	SERV	1	0	73	0	0	0	0	0	17	91
27	SERV	0	0	216	0	0	0	0	0	3	219
28	SERV	0	0	0	0	0	0	0	0	3	3
29	HOME	0	0	0	0	0	0	0	343	2	345
30	ADMN	0	0	0	0	0	20	0	0	2	22
31	SERV	0	0	126	0	0	0	0	0	0	126
32	SERV	0	0	0	0	0	0	0	0	1	1
33	SERV	0	0	70	0	0	0	0	0	0	70
34	HOME	0	0	0	0	0	0	0	32	0	32
35	INDS	0	0	0	0	19	0	0	0	123	142
36	INDS	1	0	0	0	35	0	0	0	3	39
37	HOME	0	0	0	0	0	0	0	53	0	53
38	HOME	0	0	0	0	0	0	0	15	0	15
39	INDS	0	0	0	0	2	0	0	0	7	9
40	SERV	0	0	0	0	0	0	0	0	0	0
41	HOME	0	0	0	0	0	0	0	22	0	22
42	INDS	0	0	0	0	5	0	0	0	14	19
43	SHOP	1	399	0	0	0	0	0	0	8	408
44	INDS	0	0	0	0	2	0	0	0	3	5
TOTAL		15	459	1237	425	111	184	410	607	428	3876

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO 1200. HOURS

C.S. TRIP PRODUCTIONS MODIFIED BY GATE COUNTS AND SHIFT COUNTS (PERSONS)

FROM		PURPOSE									
ZONE	USE	HOME-W	SHOPPI	SERVIC	EXTERN	INDUST	ADMINI	FLT.LI	HOME	MILITA	TOTAL
MS	EXTN	6	16	44	0	1	2	4	28	0	101
CH	EXTN	3	9	25	0	1	1	3	16	0	58
PH	EXTN	1	2	5	0	0	0	1	3	0	12
TM	EXTN	1	3	8	0	0	0	1	5	0	18
GL	EXTN	0	1	3	0	0	0	0	2	0	6
OT	EXTN	1	38	102	0	2	4	10	65	57	279
1	FLTL	0	7	9	2	1	3	1	7	9	39
2	FLTL	0	6	8	2	1	2	1	6	7	33
3	FLTL	0	25	34	7	3	9	3	24	5	110
4	FLTL	0	3	4	1	0	1	0	3	3	15
5	FLTL	0	21	29	6	3	8	3	20	25	115
6	FLTL	0	13	18	3	2	5	2	12	12	67
7	INDS	0	0	3	0	0	0	0	0	2	5
8	INDS	0	0	1	0	0	0	0	0	0	1
9	INDS	0	0	2	0	0	0	0	0	2	4
10	INDS	0	1	4	0	0	0	1	0	0	6
11	SERV	0	0	0	0	0	0	0	0	0	0
12	SERV	0	3	8	5	1	1	2	5	0	25
13	INDS	0	1	5	0	0	0	1	1	1	9
14	SERV	0	5	12	7	1	2	2	7	1	37
15	ADMN	1	8	26	2	1	0	9	3	4	54
16	ADMN	0	2	6	1	0	0	2	1	0	12
17	ADMN	0	6	18	2	1	0	7	2	0	36
18	SERV	0	11	28	17	3	4	6	16	0	85
19	INDS	0	1	5	0	0	0	1	0	27	34
20	INDS	0	2	12	1	0	1	2	1	42	61
21	SERV	0	30	74	45	9	12	15	42	37	264
22	HOME	2	22	83	35	2	3	21	41	0	209
23	SHOP	0	4	11	6	1	1	4	4	0	31
24	FLTL	0	16	21	4	2	6	2	15	5	71
25	ADMN	0	12	36	3	1	1	13	5	3	74
26	SERV	0	29	71	43	9	11	14	41	17	235
27	SERV	0	11	26	16	3	4	5	15	3	83
28	SERV	0	1	2	1	0	0	0	1	3	8
29	HOME	1	54	200	85	4	7	50	99	2	502
30	ADMN	0	3	10	1	0	0	4	1	2	21
31	SERV	0	6	14	8	2	2	3	8	0	43
32	SERV	0	0	1	1	0	0	0	1	1	4
33	SERV	0	3	7	4	1	1	1	4	0	21
34	HOME	1	5	19	8	0	1	5	9	0	48
35	INDS	0	2	13	1	0	1	2	1	123	143
36	INDS	0	4	24	2	1	1	4	3	3	42
37	HOME	1	8	31	13	1	1	8	15	0	78
38	HOME	0	2	9	4	0	0	2	4	0	21
39	INDS	0	0	1	0	0	0	0	0	7	8
40	SERV	0	2	5	3	1	1	1	3	0	16
41	HOME	0	3	13	5	0	0	3	6	0	30
42	INDS	0	1	3	0	0	0	1	0	14	19
43	SHOP	0	55	147	81	8	19	58	60	8	436
44	INDS	0	0	2	0	0	0	0	0	3	5
TOTAL		18	457	1242	425	66	115	278	605	428	3634

GATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO 1200. HOURS

C.G. TRIP ATTRACTIONS MODIFIED BY GATE COUNTS AND SHIFT COUNTS (PERSONS)

TO ZONE	USE	PURPOSE HOME-W	SHOPPI	SERVIC	EXTERN	INDUST	ADMINI	FLT.LI	HOME	MILITA	TOTAL
MS	EXTN	1	0	0	199	0	0	0	0	0	200
CH	EXTN	0	0	0	115	0	0	0	0	0	115
PH	EXTN	0	0	0	23	0	0	0	0	0	23
TM	EXTN	0	0	0	36	0	0	0	0	0	36
GL	EXTN	0	0	0	13	0	0	0	0	0	13
OT	EXTN	0	0	0	39	0	0	0	0	57	96
1	FLTL	0	0	0	0	0	0	32	0	9	41
2	FLTL	0	0	0	0	0	0	27	0	7	34
3	FLTL	3	0	0	0	0	0	112	0	5	120
4	FLTL	0	0	0	0	0	0	13	0	3	16
5	FLTL	1	0	0	0	0	0	96	0	25	122
6	FLTL	1	0	0	0	0	0	59	0	12	72
7	INDS	0	0	0	0	4	0	0	0	2	6
8	INDS	0	0	0	0	1	0	0	0	0	1
9	INDS	0	0	0	0	3	0	0	0	2	5
10	INDS	0	0	0	0	7	0	0	0	0	7
11	SERV	0	0	0	0	0	0	0	0	0	0
12	SERV	0	0	72	0	0	0	0	0	0	72
13	INDS	1	0	0	0	7	0	0	0	1	9
14	SERV	0	0	90	0	0	0	0	0	1	91
15	ADMN	0	0	0	0	0	49	0	0	4	53
16	ADMN	0	0	0	0	0	11	0	0	0	11
17	ADMN	0	0	0	0	0	35	0	0	0	35
18	SERV	0	0	334	0	0	0	0	0	0	334
19	INDS	0	0	0	0	7	0	0	0	27	34
20	INDS	2	0	0	0	19	0	0	0	42	63
21	SERV	0	0	256	0	0	0	0	0	37	293
22	HOME	0	0	0	0	0	0	0	142	0	142
23	SHOP	0	60	0	0	0	0	0	0	0	60
24	FLTL	3	0	0	0	0	0	71	0	5	79
25	ADMN	0	0	0	0	0	69	0	0	3	72
26	SERV	1	0	73	0	0	0	0	0	17	91
27	SERV	0	0	216	0	0	0	0	0	3	219
28	SERV	0	0	0	0	0	0	0	0	3	3
29	HOME	0	0	0	0	0	0	0	343	2	345
30	ADMN	0	0	0	0	0	20	0	0	2	22
31	SERV	0	0	126	0	0	0	0	0	0	126
32	SERV	0	0	0	0	0	0	0	0	1	1
33	SERV	0	0	70	0	0	0	0	0	0	70
34	HOME	0	0	0	0	0	0	0	32	0	32
35	INDS	0	0	0	0	19	0	0	0	123	142
36	INDS	1	0	0	0	35	0	0	0	3	39
37	HOME	0	0	0	0	0	0	0	53	0	53
38	HOME	0	0	0	0	0	0	0	15	0	15
39	INDS	0	0	0	0	2	0	0	0	7	9
40	SERV	0	0	0	0	0	0	0	0	0	0
41	HOME	0	0	0	0	0	0	0	22	0	22
42	INDS	0	0	0	0	5	0	0	0	14	19
43	SHOP	1	399	0	0	0	0	0	0	8	408
44	INDS	0	0	0	0	2	0	0	0	3	5
TOTAL		15	459	1237	425	111	164	410	607	428	3876

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO1200. HOURS

D.1. ORIGIN TO GATE (OG) AND GATE TO DESTINATION (GD) TRIPS (PERSONS)

ZONE	OG1	GD1	OG2	GD2	OG
MS	101.	200.	0.	0.	
CH	58.	115.	0.	0.	
PH	12.	23.	0.	0.	
TM	18.	36.	0.	0.	
GL	6.	13.	0.	0.	
OT	279.	96.	0.	0.	
1	3.	3.	36.	39.	
2	3.	2.	30.	32.	
3	8.	9.	102.	111.	
4	1.	1.	14.	15.	
5	10.	9.	105.	113.	
6	5.	5.	62.	66.	
7	0.	0.	5.	6.	
8	0.	0.	1.	1.	
9	0.	0.	4.	5.	
10	0.	0.	6.	7.	
11	0.	0.	0.	0.	
12	5.	11.	20.	61.	
13	0.	1.	9.	8.	
14	7.	14.	30.	77.	
15	3.	2.	51.	50.	
16	1.	0.	11.	11.	
17	2.	1.	34.	34.	
18	17.	50.	68.	284.	
19	4.	4.	30.	30.	
20	7.	9.	54.	54.	
21	51.	44.	213.	248.	
22	35.	28.	174.	114.	
23	6.	9.	25.	51.	
24	5.	7.	66.	72.	
25	3.	3.	71.	69.	
26	46.	15.	189.	76.	
27	16.	33.	67.	186.	
28	1.	0.	7.	3.	
29	85.	68.	417.	278.	
30	1.	1.	20.	21.	
31	8.	19.	35.	107.	
32	1.	0.	3.	1.	
33	4.	11.	17.	59.	
34	8.	6.	40.	26.	
35	20.	20.	123.	122.	
36	2.	3.	40.	37.	
37	13.	10.	65.	43.	
38	4.	3.	17.	12.	
39	1.	1.	7.	8.	
40	3.	0.	13.	0.	
41	5.	4.	25.	18.	
42	2.	2.	17.	17.	
43	82.	62.	354.	346.	
44	0.	1.	5.	5.	

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO1200. HOURS

D.2. ORIGIN - DESTINATION ARRAY (PERSONS)

ORG/DEST. ZONES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	1	0	1	2	1	1	3	2	1	0	1	1	2	0	4	0	1	0	1	0	3	0	1	0	0	0	0	0	6
2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	1	3	1	1	0	1	0	1	0	3	0	1	0	0	0	2	0	1	0	0	0	0	0	5
3	0	0	1	0	1	0	0	0	0	0	0	2	0	2	2	1	2	9	0	1	7	6	3	1	3	2	6	0	14	1	3	0	2	1	2	1	2	1	0	0	1	0	22
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	3
5	1	0	1	0	2	1	0	0	0	0	0	2	0	2	2	0	2	8	2	3	8	5	3	1	3	3	5	0	11	1	3	0	2	1	8	1	2	0	0	0	1	1	18
6	0	0	1	0	1	0	0	0	0	0	0	1	0	1	1	0	1	5	1	1	5	3	2	0	2	1	3	0	7	1	2	0	1	1	3	1	1	0	0	0	0	0	11
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	2	1	0	0	0	0	1	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	3
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
14	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	0	3	0	0	2	2	1	0	1	1	2	0	4	0	1	0	1	0	0	0	1	0	0	0	0	0	4
15	1	1	2	0	2	1	0	0	0	0	0	2	0	2	0	0	0	7	0	0	5	1	1	2	0	2	5	0	2	0	3	0	1	0	1	0	0	0	0	0	0	0	7
16	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
17	1	0	2	0	2	1	0	0	0	0	0	1	0	1	0	0	0	5	0	0	4	0	1	1	0	1	3	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	5
18	0	0	2	0	1	1	0	0	0	0	0	2	0	2	1	0	1	8	0	1	6	4	1	1	1	2	5	0	9	0	3	0	2	1	1	1	1	0	0	0	1	0	10
19	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	1	2	3	3	0	0	0	0	1	1	0	0	0	1	0	0	0	8	0	0	0	0	0	0	1	2
20	1	1	1	0	2	1	0	0	0	0	0	1	0	1	0	0	0	3	3	4	6	0	0	0	0	3	2	0	1	0	1	0	1	0	12	0	0	0	1	0	0	1	3
21	2	2	4	0	6	3	0	0	0	1	0	4	1	5	3	1	2	20	3	6	18	10	4	3	4	5	13	0	24	1	8	0	4	2	12	3	4	1	1	0	2	1	27
22	2	1	6	1	5	3	0	0	0	0	0	5	0	6	1	0	1	22	0	0	17	10	3	4	1	5	14	0	23	0	8	0	5	2	0	1	4	1	0	0	2	0	19
23	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	1	1	1	0	1	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	3
24	0	0	1	0	0	0	0	0	0	0	0	1	0	2	2	0	1	6	0	0	4	4	2	0	2	1	4	0	8	1	2	0	1	1	1	1	1	0	0	0	1	0	14
25	1	1	4	0	3	2	0	0	0	0	0	2	0	3	0	0	0	10	0	0	7	1	2	2	0	2	6	0	3	0	4	0	2	0	1	0	0	0	0	0	0	0	10
26	1	1	4	0	4	2	0	0	0	1	0	4	1	5	3	1	2	19	2	4	16	10	4	2	4	5	12	0	23	1	7	0	4	2	7	3	4	1	0	0	2	1	25
27	0	0	1	0	1	1	0	0	0	0	0	2	0	2	1	0	1	7	0	1	5	4	1	1	1	2	5	0	8	0	3	0	1	1	2	1	1	0	0	0	1	0	10
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
29	4	3	14	2	12	7	0	0	0	0	0	12	0	14	2	0	1	54	0	1	41	23	7	9	3	12	35	0	56	1	20	0	11	5	2	1	9	2	0	0	4	0	47
30	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	0	0	1	0	1	2	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	3
31	0	0	1	0	1	0	0	0	0	0	0	1	0	1	1	0	0	4	0	0	3	2	1	1	1	1	2	0	5	0	1	0	1	0	0	1	1	0	0	0	0	0	5
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	1	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
34	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	5	0	0	4	2	1	1	0	1	3	0	5	0	2	0	1	0	0	0	1	0	0	0	0	0	4
35	3	2	2	1	7	3	1	0	1	0	0	1	0	1	1	0	0	4	8	12	13	0	0	1	1	6	3	1	2	1	1	0	1	0	34	1	0	0	2	0	0	4	4
36	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	0	0	5	1	1	1	0	1	4	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	3
37	1	1	2	0	2	1	0	0	0	0	0	2	0	2	0	0	0	8	0	0	6	4	1	1	0	2	5	0	8	0	3	0	2	1	0	0	1	0	0	0	1	0	7
38	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	0	2	1	0	0	0	1	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	2
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
41	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	4	0	0	3	1	0	1	0	1	2	0	3	0	1	0	1	0	0	0	1	0	0	0	0	0	3
42	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	0	0	0	0	1	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1
43	5	4	16	2	14	8	0	0	0	1	0	9	1	11	5	1	4	40	2	2	31	14	7	10	7	9	26	0	34	2	15	0	8	3	3	3	5	1	0	0	2	0	48
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
MS	1	0	2	0	2	1	0	0	0	0	0	2	0	3	1	0	0	11	1	2	9	6	2	1	1	3	7	0	14	0	4	0	2	1	4	1	2	1	0	0	1	0	13
CH	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	1	1	5	3	1	1	0	2	4	0	8	0	2	0	1	1	2	0	1	0	0	0	1	0	8
PH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
TM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	2	1	0	0	0	1	1	0	3	0	1	0	0	0	1	0	0	0	0	0	0	0	2
GL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
OT	2	1	5	1	5	3	0	0	0	0	0	6	1	8	1	0	1	30	3	5	26	16	5	4	2	9	19	0	40	1	11	0	6	4	12	2	6	2	1	0	3	1	37

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO1200. HOURS

ORIGIN-DESTINATION ARRAY (CONTINUED)

ORG/DEST. ZONES

	44	MS	CH	PH	TM	GL	OT
1	0	1	1	0	0	0	1
2	0	1	1	0	0	0	1
3	0	3	2	0	1	0	2
4	0	1	0	0	0	0	0
5	0	4	2	0	1	0	2
6	0	2	1	0	0	0	1
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	2	1	0	0	0	1
13	0	0	0	0	0	0	0
14	0	3	2	0	1	0	1
15	0	1	1	0	0	0	1
16	0	0	0	0	0	0	0
17	0	1	0	0	0	0	0
18	0	7	4	1	1	0	3
19	0	2	1	0	0	0	1
20	0	3	2	0	1	0	1
21	0	21	12	2	4	1	10
22	0	15	8	2	3	1	7
23	0	2	1	0	0	0	1
24	0	2	1	0	0	0	1
25	0	1	1	0	0	0	1
26	0	19	11	2	3	1	9
27	0	7	4	1	1	0	3
28	0	1	0	0	0	0	0
29	0	35	20	4	6	2	17
30	0	1	0	0	0	0	0
31	0	3	2	0	1	0	2
32	0	0	0	0	0	0	0
33	0	2	1	0	0	0	1
34	0	3	2	0	1	0	2
35	1	8	5	1	1	1	4
36	0	1	1	0	0	0	0
37	0	5	3	1	1	0	3
38	0	2	1	0	0	0	1
39	0	0	0	0	0	0	0
40	0	1	1	0	0	0	1
41	0	2	1	0	0	0	1
42	0	1	1	0	0	0	0
43	0	34	20	4	6	2	16
44	0	0	0	0	0	0	0
MS	0	0	0	0	0	0	0
CH	0	0	0	0	0	0	0
PH	0	0	0	0	0	0	0
TM	0	0	0	0	0	0	0
GL	0	0	0	0	0	0	0
OT	0	0	0	0	0	0	0

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO1200. HOURS

D.3. ORIGIN-DESTINATION ARRAY FOR CIVILIAN VEHICLE TRIPS (PERSONS)

ORG/DEST. ZONES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	2	0	0	2	2	1	0	1	1	2	0	4	0	1	0	1	0	0	0	1	0	0	0	0	0	6
2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	2	1	1	0	1	0	1	0	3	0	1	0	0	0	0	0	1	0	0	0	0	0	5
3	0	0	1	0	1	0	0	0	0	0	0	2	0	2	2	1	2	9	0	1	7	6	3	1	3	2	6	0	14	1	3	0	2	1	1	1	2	1	0	0	1	0	22
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5	0	0	1	0	1	0	0	0	0	0	0	2	0	2	2	0	2	8	0	1	6	5	3	1	3	2	5	0	11	1	3	0	2	1	1	1	2	0	0	0	1	0	18
6	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	5	0	0	4	3	2	0	2	1	3	0	7	1	2	0	1	1	0	1	1	0	0	0	0	0	11
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	2	1	0	0	0	0	1	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	3
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
14	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	0	3	0	0	2	2	1	0	1	1	2	0	4	0	1	0	1	0	0	0	1	0	0	0	0	0	4
15	1	1	2	0	2	1	0	0	0	0	0	2	0	2	0	0	0	7	0	0	5	1	1	2	0	2	5	0	2	0	3	0	1	0	0	0	0	0	0	0	0	0	7
16	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
17	1	0	2	0	2	1	0	0	0	0	0	1	0	1	0	0	0	5	0	0	4	0	1	1	0	1	3	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	5
18	0	0	2	0	1	1	0	0	0	0	0	2	0	2	1	0	1	8	0	1	6	4	1	1	1	2	5	0	9	0	3	0	2	1	1	1	1	0	0	0	1	0	10
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
20	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	0	0	0	0	1	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	2
21	1	1	4	0	4	2	0	0	0	1	0	4	1	5	3	1	2	20	1	2	15	10	4	3	4	4	13	0	24	1	8	0	4	2	2	3	4	1	0	0	2	0	26
22	2	1	6	1	5	3	0	0	0	0	0	5	0	6	1	0	1	22	0	0	17	10	3	4	1	5	14	0	23	0	8	0	5	2	0	1	4	1	0	0	2	0	19
23	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	1	1	1	0	1	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	3
24	0	0	1	0	0	0	0	0	0	0	0	1	0	2	2	0	1	6	0	0	4	4	2	0	2	1	4	0	8	1	2	0	1	1	0	1	1	0	0	0	1	0	14
25	1	1	4	0	3	2	0	0	0	0	0	2	0	3	0	0	0	10	0	0	7	1	2	2	0	2	6	0	3	0	4	0	2	0	0	0	0	0	0	0	0	0	10
26	1	1	4	0	3	2	0	0	0	1	0	4	1	5	3	1	2	19	1	2	15	10	4	2	4	4	12	0	23	1	7	0	4	2	2	3	4	1	0	0	2	0	25
27	0	0	1	0	1	1	0	0	0	0	0	2	0	2	1	0	1	7	0	1	5	4	1	1	1	2	5	0	8	0	3	0	1	1	1	1	1	0	0	0	1	0	10
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
29	4	3	14	2	12	7	0	0	0	0	0	12	0	14	2	0	1	54	0	1	41	23	7	9	3	12	35	0	56	1	20	0	11	5	1	1	9	2	0	0	4	0	47
30	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	0	0	1	0	1	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	3
31	0	0	1	0	1	0	0	0	0	0	0	1	0	1	1	0	0	4	0	0	3	2	1	1	1	1	2	0	5	0	1	0	1	0	0	1	1	0	0	0	0	0	5
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	1	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
34	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	0	5	0	0	4	2	1	1	0	1	3	0	5	0	2	0	1	0	0	0	1	0	0	0	0	0	4
35	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	4	0	0	3	0	0	0	0	1	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	2
36	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	0	0	5	1	1	1	0	1	4	0	2	0	2	0	1	0	0	0	0	0	0	0	0	0	3
37	1	1	2	0	2	1	0	0	0	0	0	2	0	2	0	0	0	8	0	0	6	4	1	1	0	2	5	0	8	0	3	0	2	1	0	0	1	0	0	0	1	0	7
38	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	0	2	1	0	0	0	1	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	2
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
41	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	4	0	0	3	1	0	1	0	1	2	0	3	0	1	0	1	0	0	0	1	0	0	0	0	0	3
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
43	5	4	16	2	14	8	0	0	0	1	0	9	1	11	5	1	4	40	1	1	30	14	7	10	7	9	26	0	34	2	15	0	8	3	1	3	5	1	0	0	2	0	48
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MS	1	0	2	0	2	1	0	0	0	0	0	2	0	3	1	0	0	11	1	2	9	6	2	1	1	3	7	0	14	0	4	0	2	1	4	1	2	1	0	0	1	0	13
CH	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	1	1	5	3	1	1	0	2	4	0	8	0	2	0	1	1	2	0	1	0	0	0	1	0	8
PH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
TM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	2	1	0	0	0	1	1	0	3	0	1	0	0	0	1	0	0	0	0	0	0	0	2
GL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
OT	1	1	4	0	4	3	0	0	0	0	0	5	1	6	1	0	1	24	2	4	21	13	4	3	1	7	16	0	32	1	9	0	5	3	9	1	5	1	1	0	2	1	29

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO1200. HOURS

ORIGIN-DESTINATION ARRAY (CONTINUED)

ORG/DEST. ZONES	44	MS	CH	PH	TM	GL	OT
1	0	1	1	0	0	0	0
2	0	1	1	0	0	0	0
3	0	3	2	0	1	0	1
4	0	1	0	0	0	0	0
5	0	4	2	0	1	0	1
6	0	2	1	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	2	1	0	0	0	0
13	0	0	0	0	0	0	0
14	0	3	2	0	1	0	1
15	0	1	1	0	0	0	0
16	0	0	0	0	0	0	0
17	0	1	0	0	0	0	0
18	0	7	4	1	1	0	1
19	0	2	1	0	0	0	0
20	0	3	2	0	1	0	1
21	0	21	12	2	4	1	4
22	0	15	8	2	3	1	3
23	0	2	1	0	0	0	0
24	0	2	1	0	0	0	0
25	0	1	1	0	0	0	0
26	0	19	11	2	3	1	4
27	0	7	4	1	1	0	1
28	0	1	0	0	0	0	0
29	0	35	20	4	6	2	7
30	0	1	0	0	0	0	0
31	0	3	2	0	1	0	1
32	0	0	0	0	0	0	0
33	0	2	1	0	0	0	0
34	0	3	2	0	1	0	1
35	0	8	5	1	1	1	2
36	0	1	1	0	0	0	0
37	0	5	3	1	1	0	1
38	0	2	1	0	0	0	0
39	0	0	0	0	0	0	0
40	0	1	1	0	0	0	0
41	0	2	1	0	0	0	0
42	0	1	1	0	0	0	0
43	0	34	20	4	6	2	7
44	0	0	0	0	0	0	0
MS	0	0	0	0	0	0	0
CH	0	0	0	0	0	0	0
PH	0	0	0	0	0	0	0
TM	0	0	0	0	0	0	0
GL	0	0	0	0	0	0	0
OT	0	0	0	0	0	0	0

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO1200. HOURS

D.4. ORIGIN-DESTINATION ARRAY FOR MILITARY VEHICLE TRIPS (PERSONS)

ORG/DEST. ZONES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
5	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	0	1	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	1	0
6	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2	0	0	0	0	1	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	1	1
20	1	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	4	4	0	0	0	0	2	0	0	0	0	0	0	0	0	12	0	0	0	1	0	0	1	1
21	1	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	2	4	3	0	0	0	0	1	0	0	0	0	0	0	0	0	10	0	0	0	1	0	0	1	1
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
26	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	1	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	3	2	1	1	7	3	1	0	1	0	0	0	0	0	1	0	0	0	8	12	10	0	0	1	1	5	1	1	1	1	0	0	0	0	34	1	0	0	2	0	0	4	2
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
MS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OT	0	0	1	0	1	1	0	0	0	0	0	1	0	2	0	0	0	6	1	1	5	3	1	1	0	2	4	0	8	0	2	0	1	1	2	0	1	0	0	0	1	0	7

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO1200. HOURS

ORIGIN-DESTINATION ARRAY (CONTINUED)

ORG/DEST. ZONES

	44	MS	CH	PH	TM	GL	OT
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	1
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	1
6	0	0	0	0	0	0	1
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	1
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	1
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	2
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	1
21	0	0	0	0	0	0	6
22	0	0	0	0	0	0	4
23	0	0	0	0	0	0	1
24	0	0	0	0	0	0	1
25	0	0	0	0	0	0	0
26	0	0	0	0	0	0	5
27	0	0	0	0	0	0	2
28	0	0	0	0	0	0	0
29	0	0	0	0	0	0	10
30	0	0	0	0	0	0	0
31	0	0	0	0	0	0	1
32	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0
34	0	0	0	0	0	0	1
35	1	0	0	0	0	0	2
36	0	0	0	0	0	0	0
37	0	0	0	0	0	0	2
38	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0
41	0	0	0	0	0	0	1
42	0	0	0	0	0	0	0
43	0	0	0	0	0	0	10
44	0	0	0	0	0	0	0
MS	0	0	0	0	0	0	0
CH	0	0	0	0	0	0	0
PH	0	0	0	0	0	0	0
TM	0	0	0	0	0	0	0
GL	0	0	0	0	0	0	0
OT	0	0	0	0	0	0	0

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO1200. HOURS

E.1. MODAL SPLIT - VEHICLE LOAD FACTORS

ZONE	PERSONS PER VEHICLE	PERSONS PER MIL. VEHICLE	CIVILIAN VEH TRIPS ORG-GATE	CIVILIAN VEH TRIPS GATE-DEST	MILITARY VEH TRIPS ORG-GATE	MILITARY VEH TRIPS GATE-DEST	PERCENT MOTOR VEHICLES	PERCENT MILITARY VEHICLES	PERSON TRIPS FROM ORIGIN	PERSON TRIPS TO DEST.
MS	1.26936	1.25228	79.57	157.56	0.00	0.00	99.300	90.300	101.000	200.000
CH	1.26936	1.25228	45.69	90.60	0.00	0.00	99.300	90.300	58.000	115.000
PH	1.26936	1.25228	9.45	18.12	0.00	0.00	99.300	90.300	12.000	23.000
TM	1.26936	1.25228	14.18	28.36	0.00	0.00	99.300	90.300	18.000	36.000
GL	1.26936	1.25228	4.73	10.24	0.00	0.00	99.300	90.300	6.000	13.000
OT	1.26936	1.25228	174.89	30.72	45.52	45.52	99.300	90.300	279.000	96.000
1	1.25760	1.28000	24.36	26.46	6.84	6.71	103.000	100.000	39.383	41.866
2	1.26320	1.28000	20.95	22.08	5.17	5.03	100.000	100.000	33.075	34.327
3	1.26320	1.28000	83.49	91.21	3.36	3.37	100.000	100.000	109.768	119.530
4	1.27160	1.28000	9.55	10.11	2.59	2.51	101.000	100.000	15.461	16.063
5	1.26040	1.28000	72.89	78.90	17.94	17.73	101.000	100.000	114.841	122.147
6	1.22960	1.25200	45.59	49.29	8.61	8.64	85.000	100.000	66.844	71.435
7	1.26320	1.24360	2.52	3.40	1.71	1.73	100.000	100.000	5.307	6.451
8	1.24920	1.24360	.80	.83	0.00	0.00	93.000	100.000	1.000	1.036
9	1.24080	1.28000	1.74	2.62	1.68	1.69	88.000	100.000	4.307	5.415
10	1.27160	1.24360	4.72	5.70	0.00	0.00	100.000	100.000	6.000	7.252
11	1.25480	1.28000	0.00	0.00	0.00	0.00	100.000	100.000	0.000	0.000
12	1.22960	1.24360	20.33	56.46	0.00	0.00	100.000	100.000	25.000	71.884
13	1.27160	1.28000	6.40	6.37	.79	.90	100.000	100.000	9.154	9.263
14	1.28000	1.24360	28.06	69.98	1.00	.95	100.000	100.000	37.154	90.759
15	1.22120	1.28000	41.45	40.39	2.47	2.46	85.000	100.000	53.781	52.479
16	1.26320	1.24360	9.50	9.04	0.00	0.00	100.000	100.000	12.000	11.418
17	1.28000	1.24360	28.13	27.60	0.00	0.00	100.000	100.000	36.000	35.332
18	1.27440	1.24360	66.70	262.47	0.00	0.00	100.000	100.000	85.000	334.492
19	1.24920	1.19040	6.38	6.43	21.99	22.16	93.000	98.000	34.148	34.401
20	1.23800	1.24640	16.55	16.92	32.87	33.62	100.000	100.000	61.453	62.852
21	1.24080	1.24360	181.58	206.19	30.86	29.39	100.000	100.000	263.685	292.385
22	1.19040	1.24360	175.85	119.15	0.00	0.00	83.000	100.000	209.333	141.839
23	1.26600	1.24360	24.49	47.41	0.00	0.00	98.000	100.000	31.000	60.020
24	1.24920	1.26600	53.22	53.45	3.39	3.45	93.000	101.000	70.768	78.630
25	1.28000	1.27720	55.71	53.87	2.46	2.45	100.000	99.000	74.461	72.086
26	1.27160	1.27720	170.83	58.06	13.61	13.05	98.000	99.000	234.612	90.505
27	1.28000	1.27720	62.28	168.42	2.93	2.77	100.000	99.000	83.461	219.114
28	1.27720	1.24360	3.79	0.00	2.92	2.78	100.000	100.000	8.461	3.461
29	1.20720	1.24360	414.23	284.18	1.94	2.00	74.000	100.000	502.474	345.551
30	1.26320	1.28000	15.18	15.81	1.66	1.64	100.000	100.000	21.307	22.068
31	1.27720	1.24360	33.67	98.69	0.00	0.00	100.000	100.000	43.000	126.048
32	1.27720	1.24360	2.17	0.00	1.11	.93	100.000	100.000	4.154	1.154
33	1.27720	1.24360	16.44	54.48	0.00	0.00	100.000	100.000	21.000	69.582
34	1.20720	1.24360	39.90	26.73	0.00	0.00	83.000	100.000	48.167	32.273
35	1.27720	1.20440	17.28	16.36	100.32	100.21	99.000	100.000	142.898	141.582
36	1.24920	1.28000	31.44	29.11	2.49	2.51	93.000	100.000	42.461	39.579
37	1.20720	1.24360	64.75	44.23	0.00	0.00	83.000	100.000	78.167	53.390
38	1.20720	1.24360	17.40	12.38	0.00	0.00	83.000	100.000	21.000	14.941
39	1.24920	1.28000	.92	1.83	5.41	5.36	93.000	100.000	8.075	9.148
40	1.27720	1.24360	12.53	0.00	0.00	0.00	100.000	100.000	16.000	0.000
41	1.20720	1.24360	24.85	18.48	0.00	0.00	83.000	100.000	30.000	22.313
42	1.24920	1.28000	4.51	4.55	10.56	10.66	93.000	100.000	19.151	19.331
43	1.27440	1.28000	335.53	313.72	6.74	6.45	100.000	100.000	436.229	408.067
44	1.24920	1.24360	1.75	1.77	2.63	2.67	93.000	100.000	5.461	5.533

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO1200. HOURS

E.2. ORIGIN TO GATE (OG) AND GATE TO DESTINATION (GD) TRIPS (MOTOR VEHICLES)

ZONE	OG1	GD1	OG2	GD2	OG
MS	79.	156.	0.	0.	
CH	45.	90.	0.	0.	
PH	9.	18.	0.	0.	
TM	14.	28.	0.	0.	
GL	5.	10.	0.	0.	
OT	215.	72.	0.	0.	
1	3.	2.	29.	32.	
2	2.	2.	24.	25.	
3	6.	7.	81.	88.	
4	1.	1.	11.	12.	
5	8.	7.	84.	90.	
6	3.	4.	44.	47.	
7	0.	0.	4.	5.	
8	0.	0.	1.	1.	
9	0.	0.	3.	4.	
10	0.	0.	5.	6.	
11	0.	0.	0.	0.	
12	4.	9.	16.	50.	
13	0.	1.	7.	6.	
14	6.	11.	23.	60.	
15	2.	2.	36.	35.	
16	1.	0.	9.	9.	
17	2.	1.	27.	27.	
18	13.	40.	53.	223.	
19	3.	4.	24.	24.	
20	6.	7.	43.	43.	
21	41.	36.	172.	200.	
22	25.	19.	121.	79.	
23	5.	7.	19.	39.	
24	4.	5.	49.	54.	
25	3.	2.	55.	54.	
26	35.	11.	146.	59.	
27	13.	26.	52.	145.	
28	1.	0.	6.	2.	
29	52.	42.	256.	171.	
30	1.	1.	16.	17.	
31	6.	15.	27.	84.	
32	1.	0.	2.	1.	
33	3.	8.	13.	46.	
34	6.	4.	28.	18.	
35	16.	16.	101.	100.	
36	2.	2.	30.	28.	
37	9.	7.	45.	30.	
38	3.	2.	12.	8.	
39	1.	1.	5.	6.	
40	2.	0.	10.	0.	
41	3.	3.	17.	12.	
42	2.	2.	13.	13.	
43	65.	49.	278.	271.	
44	0.	0.	4.	4.	

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO1200. HOURS

F.1. CALIBRATION FACTORS (FACTOR=GATE COUNT = ATTRACTIONS OR PRODUCTIONS)

EXTERIOR PRODUCTIONS	EXTERIOR ATTRACTIONS	INTERIOR PRODUCTIONS	INTERIOR ATTRACTIONS
1.004	1.009	.968	.974

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO1200. HOURS

F.2. ORIGIN TO GATE (OG) AND GATE TO DESTINATION (GD) TRIPS
AFTER APPLICATION OF CALIBRATION FACTORS AND PARKING REROUTING (MOTOR VEHICLES)

ZONE	OG1	GD1	OG2	GD2	OG
MS	79.	155.	0.	0.	
CH	45.	89.	0.	0.	
PH	9.	18.	0.	0.	
TM	14.	28.	0.	0.	
GL	5.	10.	0.	0.	
OT	214.	71.	0.	0.	
1	3.	2.	29.	32.	
2	3.	2.	24.	25.	
3	6.	7.	81.	88.	
4	1.	1.	11.	12.	
5	8.	7.	84.	90.	
6	4.	4.	44.	47.	
7	0.	0.	4.	5.	
8	0.	0.	1.	1.	
9	0.	0.	3.	4.	
10	0.	0.	5.	6.	
11	0.	0.	0.	0.	
12	4.	9.	16.	50.	
13	0.	1.	7.	6.	
14	6.	11.	23.	60.	
15	2.	2.	36.	35.	
16	1.	0.	9.	9.	
17	2.	1.	27.	27.	
18	14.	41.	53.	223.	
19	3.	4.	24.	24.	
20	6.	7.	43.	43.	
21	42.	37.	172.	200.	
22	25.	20.	121.	79.	
23	5.	7.	19.	39.	
24	4.	5.	49.	54.	
25	3.	2.	55.	54.	
26	36.	11.	146.	59.	
27	13.	27.	52.	145.	
28	1.	0.	6.	2.	
29	54.	43.	256.	171.	
30	1.	1.	16.	17.	
31	6.	15.	27.	84.	
32	1.	0.	2.	1.	
33	3.	9.	13.	46.	
34	6.	4.	28.	18.	
35	17.	17.	101.	100.	
36	2.	2.	30.	28.	
37	9.	7.	45.	30.	
38	3.	2.	12.	8.	
39	1.	1.	5.	6.	
40	2.	0.	10.	0.	
41	4.	3.	17.	12.	
42	2.	2.	13.	13.	
43	67.	50.	278.	271.	
44	0.	0.	4.	4.	

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO1200. HOURS

G.1. ASSIGNMENT COUNS AND ASSCIATED COMPUTER RUN TIMES

ZONE	ASSGN. VEH. ORG. TO GATES	ASSGN.VEH. GATES TO DEST.	ASSGN. VEH. INTERNAL O-D	ASSIGNMENT TIME	TOTAL TIME	NO. PATHS FOLLOWED
1	2.833	2.386	28.227	1.940	24.463	21
2	2.509	1.886	22.002	.477	24.940	21
3	6.350	6.926	81.674	.626	25.566	30
4	1.198	.864	10.503	.370	25.936	17
5	8.106	7.487	88.621	.822	26.758	36
6	3.546	3.946	44.839	.601	27.359	32
7	.283	.369	4.145	.411	27.770	17
9	.237	.315	2.950	.731	28.501	18
10	0.000	.204	2.671	.300	28.801	18
12	4.201	9.084	13.354	.670	29.471	26
13	.125	1.018	3.593	.419	29.890	22
14	5.779	11.035	20.430	.443	30.333	31
15	2.014	1.783	35.853	.531	30.864	38
16	.818	.340	6.338	.336	31.200	27
17	1.614	1.068	25.350	.382	31.582	34
18	13.781	40.658	46.795	.489	32.071	43
ILLEGAL ROUTE-ZONE: 19,LINK149 TO LINK171						
19	3.449	3.635	24.942	.383	32.454	35
ILLEGAL ROUTE-ZONE: 20,LINK149 TO LINK171						
20	6.191	7.304	44.981	.530	32.984	43
21	42.185	36.698	166.057	.559	33.543	58
ILLEGAL ROUTE-ZONE: 22,LINK149 TO LINK171						
22	25.451	19.919	116.128	.479	34.022	49
23	4.798	7.165	17.551	.357	34.379	39
24	3.683	5.085	49.361	.657	35.036	50
25	2.792	2.473	55.922	.412	35.448	48
26	36.330	11.484	149.024	.761	36.209	62
27	13.281	26.545	49.076	.564	36.773	52
28	1.195	.380	3.886	.317	37.090	37
29	54.208	42.588	233.063	.582	37.672	62
ILLEGAL ROUTE-ZONE: 30,LINK149 TO LINK171						
30	1.068	.867	14.754	.504	38.176	45
ILLEGAL ROUTE-ZONE: 31,LINK149 TO LINK171						
31	6.471	15.304	24.270	.477	38.653	49
32	.942	.127	.950	.351	39.004	39
33	3.235	8.502	10.267	.403	39.407	46
34	5.801	4.426	26.063	.490	39.897	52
35	16.892	16.521	86.600	.760	40.657	68
ILLEGAL ROUTE-ZONE: 36,LINK149 TO LINK171						
36	1.900	1.978	27.403	.581	41.238	56
37	9.352	7.331	42.331	.606	41.844	58
38	2.841	2.075	10.509	.450	42.294	52
39	.862	.909	5.720	.296	42.590	49
40	2.427	0.000	6.338	.402	42.992	51
41	3.551	3.043	16.739	.386	43.378	57
ILLEGAL ROUTE-ZONE: 42,LINK149 TO LINK171						
42	1.712	1.843	13.552	.419	43.797	56
43	66.652	49.974	252.132	.663	44.460	60
44	.372	.427	3.916	.367	44.827	53

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO1200. HOURS

G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HDT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
1	81.95	67.70	0.00	13.10	1.15	48.04	8.32	1.27	.09	.15	3.04	3.31	11.54	.35	1.51	3.20	0.00	16.37	64.43
2	8.46	0.00	0.00	0.00	8.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	36.27	0.00	36.27	0.00	0.00	30.87	3.05	.25	0.00	0.00	.87	.16	.97	.05	.02	.04	0.00	8.48	27.79
4	40.51	0.00	0.00	0.00	40.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	102.86	92.81	2.83	7.24	0.00	75.61	12.27	2.07	.16	.28	4.85	1.00	4.89	.09	.53	1.12	0.00	23.94	78.94
6	36.90	0.00	0.00	0.00	36.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	77.75	27.37	0.00	0.00	50.39	16.42	1.24	0.00	0.00	0.00	.58	.05	8.12	.01	.03	.92	0.00	4.81	22.55
8	27.32	8.21	4.05	.97	14.08	6.00	1.64	.06	.00	0.00	.57	.86	2.66	.07	.42	.95	0.00	2.79	10.45
9	120.47	66.43	7.49	43.98	2.57	68.46	13.29	.77	0.00	.02	4.32	.33	27.99	1.74	.07	.93	0.00	21.14	89.27
10	25.45	23.02	0.00	2.42	0.00	6.73	1.74	.10	.02	0.00	.67	3.25	7.11	.18	1.77	3.88	0.00	5.20	20.24
11	40.14	21.18	0.00	0.00	18.96	4.98	1.10	.04	0.00	0.00	.46	.69	12.40	1.04	.00	.47	0.00	2.81	18.37
12	37.44	22.91	1.34	6.26	6.93	11.10	2.74	.08	.02	0.00	.92	3.25	6.58	.18	1.77	3.88	0.00	6.27	24.24
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1.03	1.03	0.00	0.00	0.00	.57	.11	.05	0.00	0.00	.16	.02	.09	.00	.01	.02	0.00	.22	.81
15	34.73	26.93	0.00	0.00	7.80	24.93	.10	0.00	0.00	0.00	.02	.37	1.15	.05	.11	.20	0.00	5.66	21.27
16	25.32	23.09	2.23	0.00	0.00	16.37	4.39	.33	.08	0.00	1.55	.58	1.06	.00	.29	.65	0.00	5.02	18.53
17	71.15	18.30	.37	52.48	0.00	35.95	4.95	.40	.09	0.00	.99	5.95	16.00	.15	2.10	4.56	0.00	10.43	60.35
18	23.09	6.68	0.00	16.41	0.00	14.98	4.12	.20	.08	0.00	1.17	.58	1.03	0.00	.29	.65	0.00	4.54	16.79
19	71.24	69.86	0.00	0.00	1.38	35.80	4.87	.40	.09	0.00	.97	5.81	15.34	.12	2.03	4.43	0.00	10.36	59.50
20	7.91	6.68	0.00	0.00	1.23	2.57	1.19	.11	.08	0.00	.28	.58	.94	0.00	.29	.65	0.00	1.04	3.87
21	105.85	90.22	0.00	0.00	15.63	7.26	4.41	.91	.26	0.00	0.00	18.57	28.63	0.00	9.29	20.90	0.00	12.10	59.84
22	126.52	79.36	16.89	30.27	0.00	28.57	5.57	.64	.14	.06	1.35	10.92	61.42	2.14	5.37	10.33	0.00	12.39	114.13
23	39.57	0.00	38.14	1.40	.03	25.21	4.68	2.25	0.00	0.00	6.75	.08	.42	.02	.05	.08	0.00	6.16	24.30
24	6.29	6.29	0.00	0.00	0.00	1.15	.33	0.00	.02	0.00	.19	.21	3.83	.03	.18	.36	0.00	1.16	5.13
25	23.42	9.18	12.86	0.00	1.37	7.98	1.74	.47	0.00	0.00	1.55	.18	9.05	.58	.10	.40	0.00	3.15	18.89
26	9.69	0.00	7.56	0.00	2.13	2.20	.52	0.00	.03	0.00	.21	.21	3.83	.03	.18	.36	0.00	1.37	6.19
27	38.59	38.59	0.00	0.00	0.00	27.34	3.95	.53	.05	.07	1.27	.61	4.04	.05	.22	.46	0.00	8.20	30.39
28	17.21	0.00	0.00	0.00	17.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	1.77	0.00	0.00	1.77	0.00	1.18	.22	0.00	0.00	0.00	.05	0.00	.29	0.00	0.00	.03	0.00	.38	1.40
30	3.95	0.00	0.00	0.00	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	12.92	12.92	0.00	0.00	0.00	11.81	.38	0.00	0.00	0.00	.38	.05	.23	.01	.03	.05	0.00	2.70	10.22
32	16.27	16.27	0.00	0.00	0.00	10.31	3.25	.13	0.00	0.00	1.07	.01	1.38	.13	0.00	0.00	0.00	3.45	12.82
33	25.96	25.96	0.00	0.00	0.00	24.42	0.00	0.00	0.00	0.00	0.00	.20	.98	.05	.11	.20	0.00	5.60	20.36
34	21.93	0.00	21.93	0.00	0.00	14.52	3.84	.14	.07	0.00	1.17	.49	.90	0.00	.25	.55	0.00	4.29	15.87
35	3.36	0.00	2.27	.06	1.03	2.32	.01	0.00	0.00	0.00	.00	.00	.00	0.00	0.00	0.00	0.00	.53	1.81
36	14.63	0.00	1.17	0.00	13.46	.46	.28	.06	.02	0.00	0.00	.08	.13	0.00	.04	.09	0.00	.25	.92
37	166.57	154.12	12.45	0.00	0.00	104.91	18.74	2.20	.18	.20	4.91	6.93	21.08	.41	2.22	4.79	0.00	30.62	135.95
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	114.30	81.79	2.13	30.39	0.00	74.81	18.76	2.47	0.00	0.00	10.38	.24	6.92	.49	.04	.19	0.00	18.56	70.46
41	161.18	128.02	13.05	0.00	20.12	86.25	16.44	3.18	.16	.44	6.97	3.79	19.79	.45	1.25	2.35	0.00	28.10	112.96
42	186.32	143.98	0.00	22.02	20.33	64.56	17.92	1.25	.38	0.00	5.59	13.89	38.77	.59	7.24	15.80	0.00	23.81	112.52
43	43.63	0.00	41.65	1.60	.38	38.88	2.59	0.00	0.00	0.00	.62	.07	.98	.00	.00	.10	0.00	8.21	30.08
44	68.99	48.57	0.00	7.62	12.81	23.78	4.83	.27	.05	.02	1.77	1.57	20.52	.31	1.02	2.03	0.00	8.18	48.03
45	7.62	0.00	0.00	7.62	0.00	5.66	.78	0.00	0.00	0.00	.78	.05	.25	.01	.03	.05	0.00	1.68	5.94
46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	102.54	0.00	0.00	102.54	0.00	7.94	4.62	.99	.28	0.00	0.00	21.24	32.75	0.00	10.62	23.90	0.00	13.46	70.79
48	103.21	100.36	0.00	0.00	2.85	11.59	3.25	.32	.10	.01	.59	10.10	57.32	2.02	5.16	9.92	0.00	6.98	93.39
49	101.80	0.00	101.80	0.00	0.00	10.94	3.00	.32	.08	.01	.48	10.13	59.76	2.02	5.16	9.92	0.00	6.88	94.92

BATS MODEL OUTPUT　78/ 9/29　WILLIAMS AFB　11-1200 PREDICTIVE RUN - ONE　PERIOD FROM 1100. TO1200. HOURS

G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

(CONTINUED)

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HOT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
50	104.23	0.00	0.00	1.69	102.54	.24	.06	0.00	0.00	0.00	.01	0 00	1.22	0.00	.06	.08	0.00	.11	1.58
51	405.54	279.93	0.00	125.61	0.00	285.41	48.86	6.38	.43	.54	19.40	7 72	25.36	.88	3.40	7.17	0.00	80.70	322.32
52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	1.05	1.05	0.00	0.00	0.00	.71	.13	0.00	0.00	0.00	.03	0.00	.16	0.00	0.00	.02	0.00	.22	.83
54	13.27	12.23	1.04	0.00	0.00	8.47	1.70	.01	.09	0.00	.28	.14	2.19	.01	.13	.26	0.00	2.84	10.43
55	120.00	103.57	16.43	0.00	0.00	86.40	12.77	1.71	.09	.17	4.04	1.78	11.14	.39	.53	1.00	0.00	24.86	95.14
56	.37	0.00	0.00	0.00	.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	106.03	0.00	0.00	103.81	2.22	90.03	10.01	.15	.14	0.00	.82	.32	1.80	.07	.16	.30	0.00	18.92	73.85
58	63.45	61.70	1.75	0.00	0.00	48.84	9.14	.02	.57	0.00	1.40	.21	2.76	.03	.17	.33	0.00	13.25	50.20
59	105.69	36.92	1.13	0.00	65.64	34.21	4.25	.17	.14	0.00	.69	.07	.41	.02	.04	.07	0.00	8.47	31.57
60	187.33	0.00	4.39	5.03	177.91	4.25	1.04	.01	.01	0.00	.35	.37	2.64	.01	.24	.52	0.00	1.93	7.49
61	6.56	0.00	0.00	0.00	6.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	9.09	1.80	0.00	7.28	0.00	7.37	1.42	.01	.04	0.00	.24	0.00	0.00	0.00	0.00	0.00	0.00	1.98	7.10
63	68.06	1.89	0.00	27.28	38.89	28.20	.20	0.00	0.00	0.00	.20	.07	.36	.02	.04	.07	0.00	5.87	23.30
64	116.44	0.00	94.62	1.09	20.73	64.50	17.40	.79	.02	.11	9.43	.52	2.39	.05	.15	.35	0.00	20.34	75.37
65	98.21	0.00	43.59	0.00	54.63	34.77	2.90	.26	0.00	0.00	1.21	.12	3.81	.23	.07	.23	0.00	8.47	35.11
66	101.45	20.47	13.79	64.08	3.11	51.69	10.89	.80	.36	.07	3.40	5.39	15.42	.30	3.32	6.71	0.00	19.56	78.77
67	37.63	37.63	0.00	0.00	0.00	29.20	5.72	.23	.08	0.00	2.39	0.00	0.00	0.00	0.00	0.00	0.00	8.09	29.54
68	31.21	31.21	0.00	0.00	0.00	24.10	3.34	0.00	0.00	0.00	3.34	.06	.28	.01	.03	.06	0.00	6.68	24.54
69	31.73	31.73	0.00	0.00	0.00	24.81	4.77	.16	.06	0.00	1.93	0.00	0.00	0.00	0.00	0.00	0.00	6.93	24.80
70	31.21	0.00	0.00	0.00	31.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71	263.13	191.53	68.06	0.00	3.54	186.11	27.99	2.74	.23	.23	6.04	7.05	21.63	.43	2.27	4.88	0.00	47.46	201.10
72	1.09	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	28.39	12.92	0.00	1.03	14.45	12.38	.48	.05	0.00	0.00	.54	.06	.32	.01	.03	.06	0.00	2.91	11.03
74	23.27	23.27	0.00	0.00	0.00	11.83	3.58	.15	.00	0.00	1.24	.86	4.04	.19	.42	.95	0.00	4.94	18.33
75	44.69	0.00	0.00	27.10	17.59	26.93	0.00	0.00	0.00	0.00	0.00	.02	.11	.01	.01	.02	0.00	5.77	21.34
76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
77	64.09	6.76	0.00	0.00	57.34	4.43	.66	0.00	0.00	0.00	.01	.24	1.18	.03	.07	.13	0.00	1.28	5.47
78	62.09	8.26	9.52	19.86	24.45	25.79	5.13	.39	.01	0.00	1.75	.42	3.31	.12	.18	.55	0.00	6.47	24.44
79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	108.55	38.09	14.41	56.04	0.00	67.33	18.28	.78	0.00	0.00	5.97	.17	14.66	1.01	.00	.34	0.00	18.37	74.90
81	290.64	188.98	0.00	99.61	2.04	189.59	40.11	3.55	.26	.34	15.30	7.68	23.49	.44	2.47	5.38	0.00	56.44	232.16
82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83	189.58	142.97	0.00	46.61	0.00	130.35	19.90	3.53	.23	.34	3.36	6.57	18.93	.27	1.87	4.21	0.00	35.95	153.63
84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	439.75	373.42	40.64	0.00	25.69	304.78	45.01	8.43	.23	.65	16.65	6.05	23.97	.72	2.39	5.17	0.00	81.26	323.93
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	284.24	246.97	37.27	0.00	0.00	209.37	42.13	2.11	.82	0.00	12.89	2.67	9.46	.43	1.43	2.92	0.00	42.72	160.73
89	7.44	0.00	0.00	0.00	7.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	507.50	362.13	0.00	145.37	0.00	382.16	74.04	1.53	.61	0.00	27.29	3.29	13.36	.63	1.53	3.05	0.00	60.31	222.17
91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	331.28	281.31	49.97	0.00	0.00	258.26	40.89	4.74	.06	.55	14.39	1.35	9.46	.34	.41	.83	0.00	7.97	28.01
93	80.50	70.66	2.67	6.07	1.11	51.63	7.04	1.30	0.00	0.00	6.10	1.12	11.59	.32	.10	.19	0.00	15.07	64.32
94	134.79	116.26	0.00	4.95	13.56	68.48	14.81	.27	.11	0.00	6.97	5.39	16.91	.21	2.51	5.57	0.00	3.72	21.34
95	35.05	6.83	3.33	0.00	24.89	2.74	.38	.09	0.00	0.00	.14	.04	6.64	.07	.02	.03	0.00	1.19	8.97
96	7.42	5.24	0.00	1.27	.91	2.09	.44	0.00	.01	0.00	.08	.59	1.19	.32	.59	1.19	0.00	.43	2.45
97	3.04	0.00	1.42	0.00	1.61	1.11	.15	0.00	0.00	0.00	.15	0.00	0.00	0.00	0.00	0.00	0.00	.28	1.14
98	1.26	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO1200. HOURS

G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

(CONTINUED)

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HDT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101	113.93	86.62	25.43	1.88	0.00	84.66	13.56	2.31	.17	.31	4.86	1.17	5.33	.13	.48	.94	0.00	25.64	88.28
102	58.03	30.64	8.92	18.47	0.00	39.95	9.35	.15	0.00	0.00	2.63	.05	5.74	0.00	.07	.10	0.00	10.23	40.83
103	208.56	145.11	0.00	63.45	0.00	137.10	25.13	2.27	.66	.20	6.12	6.93	22.57	.39	2.27	4.91	0.00	39.63	168.93
104	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
106	106.38	0.00	0.00	92.80	13.58	52.70	20.19	.04	.06	0.00	11.95	1.14	4.72	.18	.61	1.20	0.00	19.10	73.70
107	49.15	0.00	16.02	0.00	33.13	11.67	2.40	.26	0.00	0.00	1.06	.08	.41	.02	.04	.08	0.00	3.36	12.67
108	274.40	0.00	103.26	0.00	171.15	65.79	18.75	1.83	.02	.22	5.80	1.39	7.94	.20	.46	.86	0.00	20.24	83.02
109	327.46	209.34	118.12	0.00	0.00	230.66	34.85	2.35	.23	0.00	14.42	5.99	30.75	.70	2.37	5.14	0.00	53.59	226.43
110	5.06	0.00	0.00	0.00	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
111	219.07	43.63	0.00	137.98	37.46	126.28	25.58	.46	0.00	0.00	11.02	2.05	14.37	.42	.46	.96	0.00	34.73	141.54
112	77.91	38.87	0.00	27.86	11.17	49.30	8.00	2.45	.10	.38	2.35	.39	2.52	.05	.19	.41	0.00	13.70	53.03
113	281.74	171.61	0.00	0.00	110.13	117.74	23.57	.39	0.00	0.00	10.62	4.49	13.15	.41	.44	.81	0.00	33.41	138.20
114	101.95	0.00	2.14	26.67	73.14	18.06	4.67	.08	.12	0.00	1.68	.70	2.12	.05	.45	.89	0.00	6.19	22.61
115	151.90	0.00	59.02	87.10	5.78	135.23	8.61	0.00	0.00	0.00	.89	.52	.68	.02	.05	.10	0.00	15.44	56.69
116	32.86	0.00	7.44	23.60	1.82	21.25	4.82	.54	.10	.07	1.83	.33	1.49	.01	.19	.40	0.00	6.55	24.49
117	1.46	0.00	1.46	0.00	0.00	.13	.03	0.00	0.00	0.00	.01	.17	.83	.04	.09	.17	0.00	.07	.97
118	4.29	4.29	0.00	0.00	0.00	.80	.31	.03	.01	0.00	.05	.55	1.61	.05	.28	.59	0.00	.30	3.99
119	159.79	100.89	23.81	4.43	30.66	120.14	4.10	.23	0.00	0.00	1.78	.24	2.23	.12	.08	.20	0.00	17.29	64.40
120	201.26	0.00	196.21	5.06	0.00	160.47	17.80	4.03	.20	.54	6.07	1.99	6.73	.20	1.09	2.14	0.00	41.89	156.85
121	145.43	0.00	0.00	141.65	3.77	111.71	12.69	5.41	0.00	.65	2.96	.09	8.05	.02	.03	.05	0.00	25.37	96.30
122	134.68	0.00	64.24	70.44	0.00	95.93	16.66	3.88	.20	.63	5.76	1.75	6.60	.18	1.04	2.05	0.00	27.72	104.80
123	96.95	0.00	80.43	0.00	16.52	62.60	7.13	2.42	.03	.33	2.52	.11	5.16	.04	.03	.06	0.00	16.25	64.18
124	71.26	3.38	12.27	5.64	49.97	15.18	2.80	.63	.05	0.00	.95	.15	1.23	.02	.10	.20	0.00	4.48	16.81
125	37.63	36.36	1.27	0.00	0.00	29.93	3.49	.76	.01	.07	1.97	.00	1.40	0.00	0.00	0.00	0.00	7.95	29.68
126	16.99	14.53	0.00	1.26	1.20	12.37	1.71	0.00	0.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	1.36	5.03
127	19.95	19.95	0.00	0.00	0.00	16.21	2.00	.45	0.00	.05	1.24	0.00	0.00	0.00	0.00	0.00	0.00	4.36	15.60
128	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
129	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
131	19.95	0.00	19.95	0.00	0.00	16.21	2.00	.45	0.00	.05	1.24	0.00	0.00	0.00	0.00	0.00	0.00	4.36	15.60
132	19.95	0.00	0.00	19.95	0.00	16.21	2.00	.45	0.00	.05	1.24	0.00	0.00	0.00	0.00	0.00	0.00	4.36	15.60
133	330.80	230.71	0.00	32.86	67.23	160.84	38.05	2.65	.33	.07	15.29	6.17	31.55	.69	2.50	5.43	0.00	50.00	213.57
134	59.02	0.00	0.00	0.00	59.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	114.95	1.46	0.00	0.00	113.48	.13	.03	0.00	0.00	0.00	.01	.17	.83	.04	.09	.17	0.00	.07	.97
136	155.91	114.03	14.68	27.20	0.00	136.10	10.84	3.08	.01	.34	1.77	.64	2.11	.06	.31	.65	0.00	32.34	119.28
137	.86	0.00	.86	0.00	0.00	.19	.04	0.00	0.00	0.00	.01	0.00	.61	.01	0.00	0.00	0.00	.07	.78
138	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
139	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	2.90	2.90	0.00	0.00	0.00	2.27	.31	0.00	0.00	0.00	.31	0.00	0.00	0.00	0.00	0.00	0.00	.63	2.27
141	27.70	0.00	0.00	11.50	16.20	9.58	1.09	.43	0.00	0.00	.40	.00	.00	.00	.00	.00	0.00	2.47	9.03
142	2.92	1.21	0.00	1.71	0.00	2.76	.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.63	2.29
143	2.92	0.00	2.92	0.00	0.00	2.76	.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.63	2.29
144	14.41	0.00	0.00	14.41	0.00	11.85	1.40	.43	0.00	0.00	.71	.00	.00	.00	.00	.00	0.00	3.11	11.30
145	46.80	0.00	2.92	0.00	43.88	2.76	.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.63	2.29
146	58.26	0.00	51.04	0.00	7.22	38.67	6.24	.65	.07	.02	2.00	.12	2.98	0.00	.10	.20	0.00	10.76	40.28
147	424.46	368.86	0.00	55.60	0.00	309.50	47.66	7.08	.30	.67	18.24	6.08	26.51	.70	2.44	5.28	0.00	85.45	338.64
148	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO1200. HOURS

G.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

(CONTINUED)

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HDT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
150	532.95	328.05	153.18	0.00	51.72	349.04	56.53	5.53	.18	.55	22.96	5.96	29.39	.61	2.69	5.79	0.00	9.94	35.65
151	84.98	0.00	3.24	37.63	44.12	25.52	3.80	.17	0.00	0.00	5.13	.68	5.33	.23	0.00	0.00	0.00	7.55	33.31
152	146.20	0.00	6.91	129.29	10.01	79.49	16.22	.16	.13	0.00	8.41	4.57	19.72	.26	2.27	4.95	0.00	2.71	10.18
153	6.91	0.00	0.00	0.00	6.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
154	1.89	1.89	0.00	0.00	0.00	.53	.06	.03	0.00	0.00	.01	.27	.56	.01	.14	.30	0.00	.31	1.56
155	6.83	0.00	0.00	0.00	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
156	1.61	1.61	0.00	0.00	0.00	.44	.10	0.00	0.00	0.00	.02	.16	.32	.08	.16	.32	0.00	.14	1.47
157	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
158	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
159	59.98	43.45	9.21	4.07	3.25	44.93	5.76	1.16	.03	.09	2.96	.01	1.79	.00	.00	.00	0.00	11.67	45.06
160	29.73	16.99	0.00	4.54	8.19	13.86	2.06	0.00	0.00	0.00	1.80	.45	1.83	.23	.44	.87	0.00	1.61	5.98
161	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
162	12.46	0.00	0.00	0.00	12.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
163	4.29	0.00	0.00	4.29	0.00	.80	.31	.03	.01	0.00	.05	.55	1.61	.05	.28	.59	0.00	.30	3.99
164	1.46	1.46	0.00	0.00	0.00	.13	.03	0.00	0.00	0.00	.01	.17	.83	.04	.09	.17	0.00	.07	.97
165	4.29	4.29	0.00	0.00	0.00	.80	.31	.03	.01	0.00	.05	.55	1.61	.05	.28	.59	0.00	.30	3.99
166	1.46	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
167	300.03	0.00	0.00	0.00	300.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
168	205.61	205.61	0.00	0.00	0.00	151.01	24.24	3.73	.37	.19	5.59	16.78	3.40	.23	.02	.02	.02	0.00	0.00
169	160.39	0.00	0.00	160.39	0.00	114.13	18.32	2.82	.28	.14	4.23	16.78	3.40	.23	.02	.02	.02	0.00	0.00
170	70.97	0.00	0.00	0.00	70.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
171	371.00	300.03	70.97	0.00	0.00	269.40	43.24	6.65	.67	.33	9.98	33.38	6.77	.45	.05	.05	.05	0.00	0.00
172	450.95	450.95	0.00	0.00	0.00	327.47	54.03	5.75	.08	.49	20.78	5.84	27.73	.61	2.58	5.58	0.00	0.00	0.00
173	43.62	12.73	0.00	18.52	12.38	8.02	1.74	.14	.04	0.00	.85	4.39	8.27	.17	2.38	5.25	0.00	6.58	24.67
174	35.60	15.67	0.00	17.78	2.14	13.79	1.97	.28	.02	.04	.58	1.19	13.93	1.02	.07	.56	0.00	4.96	28.49
175	26.93	0.00	0.00	25.96	.98	24.42	0.00	0.00	0.00	0.00	0.00	.20	.98	.05	.11	.20	0.00	5.60	20.36
176	22.95	21.93	1.03	0.00	0.00	15.09	3.94	.20	.07	0.00	1.33	.51	.98	.00	.26	.57	0.00	4.51	16.68
177	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
178	94.65	92.13	1.23	1.29	0.00	56.00	15.57	.69	0.00	0.00	5.12	.30	15.37	1.04	.07	.47	0.00	15.15	63.54
179	79.36	41.02	0.00	38.34	0.00	27.34	5.33	.64	.14	.06	1.21	8.09	27.47	.45	2.78	5.84	0.00	8.71	70.65
180	89.21	87.33	1.88	0.00	0.00	15.19	7.07	.77	.47	0.00	1.41	14.70	25.61	.04	7.38	16.58	0.00	11.12	57.43
181	124.96	124.96	0.00	0.00	0.00	79.16	14.25	2.60	.22	.37	5.27	3.59	15.99	.42	1.07	2.00	0.00	24.49	100.47
182	150.23	58.03	78.59	3.61	10.00	54.34	15.20	.86	.38	0.00	3.90	13.67	29.62	.00	6.87	15.40	0.00	20.44	93.92
183	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
184	8.82	0.00	8.82	0.00	0.00	.28	.17	.04	.01	0.00	0.00	2.00	3.08	0.00	1.00	2.25	0.00	.64	8.19
185	171.46	165.17	0.00	6.29	0.00	104.85	18.89	2.20	.20	.20	5.09	7.14	24.91	.44	2.40	5.15	0.00	31.54	139.92
186	38.14	0.00	0.00	0.00	38.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
187	40.36	0.00	0.00	40.36	0.00	28.52	4.17	.53	.05	.07	1.32	.61	4.33	.05	.22	.49	0.00	8.57	31.79
188	21.16	17.21	3.95	0.00	0.00	15.79	2.97	0.00	0.00	0.00	.69	0.00	1.54	0.00	0.00	.17	0.00	3.66	13.55
189	43.72	14.16	4.67	24.89	0.00	34.89	3.40	.52	0.00	.07	1.49	.52	2.37	.05	.12	.28	0.00	9.24	34.48
190	40.09	16.27	3.71	20.11	0.00	28.42	6.65	.13	.04	0.00	1.80	.01	2.76	.13	0.00	.15	0.00	7.70	28.44
191	21.16	0.00	21.16	0.00	0.00	15.79	2.97	0.00	0.00	0.00	.69	0.00	1.54	0.00	0.00	.17	0.00	3.66	13.55
192	40.36	9.56	30.80	0.00	0.00	28.52	4.17	.53	.05	.07	1.32	.61	4.33	.05	.22	.49	0.00	8.57	31.79
193	37.27	33.33	0.00	2.89	1.04	33.84	.67	0.00	0.00	0.00	0.00	.25	1.07	.05	.12	.21	0.00	7.80	28.42
194	71.21	21.93	49.28	0.00	0.00	52.28	10.80	.94	.41	0.00	4.29	.58	1.07	.00	.26	.58	0.00	14.54	53.88
195	3.33	1.05	0.00	2.27	0.00	2.99	.13	0.00	0.00	0.00	.03	0.00	.16	0.00	0.00	.02	0.00	.74	2.59
196	66.33	50.68	0.00	14.63	1.02	47.45	9.20	.92	.47	0.00	3.50	.32	2.77	.03	.22	.44	0.00	13.79	51.52
197	12.45	0.00	0.00	0.00	12.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
198	54.44	0.00	54.44	0.00	0.00	41.47	7.91	.07	.48	0.00	1.22	.22	2.55	.03	.17	.33	0.00	11.49	42.95
199	16.01	2.54	8.94	0.00	4.53	9.16	.43	0.00	0.00	0.00	.19	.14	1.30	.03	.08	.14	0.00	2.28	9.19

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO1200. HOURS

8.2. VEHICLE COUNT, TYPE, AND HOT/COLD STATUS

(CONTINUED)

LINK	SUM	THRU	RT	LEFT	TERM	LDV	LDT1	LDT2	HDT	HDD	MOT	LDVM	LDT1M	LDT2M	HDTM	HDDM	MOTM	COLDS	HOTS
200	57.09	20 44	0.00	0.00	36.65	12.61	2.71	.39	.01	0.00	1.31	.36	2.33	.12	.18	.45	0.00	3.89	14.78
201	1.75	0.00	0.00	0.00	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
202	318.81	113.17	121.88	66.31	17.44	230.97	42.80	2.46	.78	0.00	13.05	.67	9.18	.59	.26	.60	0.00	46.22	177.55
203	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
204	347.48	347.48	0.00	0.00	0.00	229.70	69.13	1.81	.79	0.00	22.91	3.34	13.80	.66	1.80	3.55	0.00	48.41	180.47
205	157.76	113.87	41.05	2.84	0.00	90.24	18.52	3.36	.10	.46	7.69	5.16	26.64	.99	1.59	3.00	0.00	29.82	127.94
206	239.26	190.93	0.00	48.34	0.00	130.20	29.31	1.01	.83	0.00	6.60	13.56	34.83	.40	7.06	15.45	0.00	30.87	138 47
207	36.31	6.84	4.13	25.35	0.00	17.28	4.19	.21	.05	.02	1.02	1.47	10.39	.75	.33	.61	0.00	4.84	31.48
208	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
209	53.78	30.58	23.20	0.00	0.00	18.42	4.44	.27	.08	.02	1.12	1.69	23.95	.32	1.16	2.31	0.00	6.86	46.92
210	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
211	5.21	0.00	0.00	5.21	0.00	.30	.39	0.00	.03	0.00	.13	.17	3.68	.02	.17	.33	0.00	.38	4.83
212	16.44	0.00	7.62	8.82	0.00	5.94	.95	.04	.01	0.00	.78	2.05	3.33	.01	1.03	2.30	0.00	2.31	14.13
213	30.58	30.58	0.00	0.00	0.00	3.00	.77	.09	.03	0.00	.26	1.13	21.95	.07	1.09	2.19	0.00	2.97	27.61
214	26.38	0.00	0.00	13.11	13.27	1.86	.51	.03	0.00	0.00	.16	.92	8.38	.50	.26	.49	0.00	.94	12.17
215	42.23	7.63	21.29	13.31	0.00	30.25	5.92	.23	.09	0.00	2.42	.55	1.78	0.00	.28	.72	0.00	8.58	33.66
216	34.84	25.21	1.60	8.03	0.00	21.48	3.15	0.00	0.00	0.00	2.83	1.04	2.70	.55	1.03	2.06	0.00	6.98	27.86
217	40.96	40.96	0.00	0.00	0.00	29.20	5.72	.23	.08	0.00	2.39	.55	1.78	0.00	.28	.72	0.00	8.28	32.68
218	25.21	23.60	1.61	0.00	0.00	19.71	2.73	0.00	0.00	0.00	2.73	.01	.03	.00	.00	.01	0.00	5.34	19.87
219	146.34	132.68	0.00	0.00	13.66	95.02	10.68	3.84	0.00	.53	4.49	2.85	14.65	.49	.04	.08	0.00	26.00	106.68
220	167.25	153.89	8.78	.92	3.65	92.21	19.84	.47	.44	0.00	4.91	8.50	22.75	.44	4.34	9.72	0.00	16.16	77.52
221	34.69	1.89	32.81	0.00	0.00	24.07	5.69	.11	0.00	0.00	1.76	.01	2.76	.13	0.00	.15	0.00	6.48	24.27
222	158.14	91.72	3.48	62.95	0.00	112.91	27.17	1.12	.43	.07	12.16	.67	2.90	.04	.20	.48	0.00	33.66	124.48
223	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
224	440.28	268.21	172.06	0.00	0.00	282.40	89.32	1.85	.85	0.00	34.87	4.48	18.52	.84	2.41	4.75	0.00	67.51	254.16
225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
226	385.73	319.62	36.41	29.71	0.00	262.36	70.02	1.63	.71	0.00	28.16	3.11	14.11	.62	1.66	3.35	0.00	49.93	184.77
227	64.24	0.00	0.00	0.00	64.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
228	409.16	257.54	0.00	145.43	6.19	313.70	47.76	6.15	.08	.65	16.82	1.46	14.61	.38	.45	.90	0.00	33.07	124.57
229	89.66	0.00	80.68	0.00	9.00	58.37	7.18	2.14	0.00	0.00	5.47	.84	6.13	.27	.10	.18	0.00	15.52	65.16
230	142.94	116.29	20.27	3.61	2.76	74.94	15.70	.20	.13	0.00	7.73	6.15	24.98	.44	3.12	6.78	0.00	3.30	20.42
231	292.14	75.13	200.14	0.00	16.86	187.41	32.43	6.04	0.00	.76	14.67	5.43	26.48	.69	.48	.89	0.00	53.43	221.85
232	167.08	144.85	0.00	12.27	9.96	92.22	22.19	.39	.40	0.00	5.88	6.42	19.21	.36	3.19	6.87	0.00	15.40	65.47
233	34.74	34.74	0.00	0.00	0.00	28.77	3.32	.76	.01	.07	1.81	0.00	0.00	0.00	0.00	0.00	0.00	7.59	27.16
234	14.53	0.00	12.46	0.00	2.07	9.76	1.35	0.00	0.00	0.00	1.35	0.00	0.00	0.00	0.00	0.00	0.00	1.09	4.04
235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
236	12.46	0.00	0.00	12.46	0.00	9.76	1.35	0.00	0.00	0.00	1.35	0.00	0.00	0.00	0.00	0.00	0.00	1.09	4.04
237	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
238	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
239	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	1.69	0.00	0.00	0.00	1.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	*923.4	*427.92	844.42	979.3	*71.82	*77.81	*49.87	181.76	20.57	14.18	707.14	448.03	*79.66	42.50	168.02	361.94	.09	*80.70	*69.01

BATS MODEL OUTPUT   78/ 9/29   WILLIAMS AFB   11-1200 PREDICTIVE RUN - ONE   PERIOD FROM 1100. TO 1200. HOURS

H.2. INTERSECTION DELAYS AND QUEUEING

	N-APPR DELAY (SEC)	QUEUE (VEH)	E-APPR DELAY (SEC)	QUEUE (VEH)	S-APPR DELAY (SEC)	QUEUE (VEH)	W-APPR DELAY (SEC)	QUEUE (VEH)
INTERSECTION 1	1.	0.	4.	0.	1.	0.	0.	0.
INTERSECTION 2	4.	0.	1.	0.	4.	0.	1.	0.
INTERSECTION 3	4.	0.	1.	0.	4.	0.	1.	0.
INTERSECTION 4	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 5	0.	0.	0.	0.	0.	0.	1.	0.
INTERSECTION 6	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 7	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 8	4.	0.	0.	0.	4.	0.	1.	0.
INTERSECTION 9	5.	0.	2.	0.	5.	0.	2.	0.
INTERSECTION 10	0.	0.	0.	0.	0.	0.	1.	0.
INTERSECTION 11	2.	0.	5.	0.	2.	0.	5.	0.
INTERSECTION 12	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 13	4.	0.	0.	0.	4.	0.	1.	0.
INTERSECTION 14	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 15	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 16	0.	0.	1.	0.	0.	0.	1.	0.
INTERSECTION 17	4.	0.	1.	0.	4.	0.	1.	0.
INTERSECTION 18	0.	0.	1.	0.	0.	0.	0.	0.
INTERSECTION 19	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 20	5.	0.	0.	0.	5.	0.	2.	0.
INTERSECTION 21	5.	0.	2.	0.	5.	0.	2.	0.
INTERSECTION 22	0.	0.	4.	0.	0.	0.	4.	0.
INTERSECTION 23	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 24	0.	0.	1.	0.	0.	0.	0.	0.
INTERSECTION 25	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 26	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 27	0.	0.	1.	0.	1.	0.	0.	0.
INTERSECTION 28	1.	0.	1.	0.	0.	0.	0.	0.
INTERSECTION 29	0.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION 30	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 31	1.	0.	5.	0.	1.	0.	5.	0.
INTERSECTION 32	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 33	0.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION 34	5.	0.	3.	0.	5.	0.	3.	0.
INTERSECTION 35	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 36	1.	0.	0.	0.	1.	0.	0.	0.
INTERSECTION 37	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 38	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 39	1.	0.	1.	0.	0.	0.	0.	0.
INTERSECTION 40	0.	0.	0.	0.	1.	0.	1.	0.
INTERSECTION 41	1.	0.	0.	0.	0.	0.	1.	0.
INTERSECTION 42	1.	0.	0.	0.	0.	0.	1.	0.
INTERSECTION 43	0.	0.	0.	0.	1.	0.	1.	0.
INTERSECTION 44	0.	0.	0.	0.	1.	0.	1.	0.
INTERSECTION 45	5.	0.	2.	0.	5.	0.	2.	0.
INTERSECTION 46	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 47	0.	0.	4.	0.	0.	0.	4.	0.
INTERSECTION 48	1.	0.	4.	0.	1.	0.	4.	0.
INTERSECTION 49	0.	0.	1.	0.	0.	0.	0.	0.
INTERSECTION 50	0.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 51	1.	0.	0.	0.	0.	0.	1.	0.
INTERSECTION 52	1.	0.	0.	0.	0.	0.	0.	0.
INTERSECTION 53	0.	0.	1.	0.	1.	0.	0.	0.
INTERSECTION 54	6.	1.	0.	0.	6.	1.	4.	1.

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INTERSECTION   55      2.      0.          5.      0.          2.      0.          5.      0.
INTERSECTION   56      0.      0.          0.      0.          0.      0.          0.      0.
INTERSECTION   57      1.      0.          4.      0.          1.      0.          4.      0.
INTERSECTION   58      0.      0.          0.      0.          0.      0.          0.      0.
INTERSECTION   59      1.      0.          0.      0.          1.      0.          0.      0.
INTERSECTION   60      1.      1.          0.      0.          0.      0.          1.      1.

INTERSECTION   61
                        PHASE 1                  PHASE 2                  PHASE 3                  PHASE 4
TIME(SEC)               13.                      19.                      -0.                      -0.
V/GCAP                  .05569                   .14661                   0.00000                  0.00000
              NORTH-APPR SOUTH-APPR    EAST-APPR  WEST-APPR    N-APP-LEFT S-APP-LEFT    E-APP-LEFT W-APP-LEFT
DELAY(SEC)          6.         6.           4.         3.            6.         6.            4.         3.
QUEUE(VEH)          0.         0.           0.         0.            0.         0.            0.         0.
VOLUME(VEH)       160.         0.         371.       206.            0.         0.            0.         0.
CAPACITY(VEH)    1040.       867.        1378.      1503.            0.         0.            0.         0.
V/GCAP          .05569    0.00000       .14661     .07449       0.00000    0.00000       0.00000    0.00000

                  N-APPR DELAY QUEUE    E-APPR DELAY QUEUE    S-APPR DELAY QUEUE    W-APPR DELAY QUEUE
                         (SEC)  (VEH)          (SEC)  (VEH)          (SEC)  (VEH)          (SEC)  (VEH)
INTERSECTION   62         0.     0.             0.     0.             0.     0.             0.     0.
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BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO 1200. HOURS

H.3. PARKING LOT TRAVEL TIMES AND DELAYS

	ZONE	TOTAL TIME (SEC)	TT ARRV (SEC)	TT DEPT (SEC)	BACKNG Q (SEC)	Q DELAY (SEC)	DEPARTS (VEH)	ARRVALS (VEH)	LENGTH (METERS)
PARKNG	1	2619.997	35.943	47.943	0.000	0.000	30.415	32.324	227.228
PARKNG	2	1648.428	25.961	37.961	0.000	0.000	25.410	26.341	165.402
PARKNG	3	7903.210	39.068	51.068	0.000	0.000	84.444	91.914	243.341
PARKNG	4	833.533	27.941	39.941	0.000	0.000	12.091	12.546	176.552
PARKNG	5	8639.557	41.443	53.443	0.000	0.000	88.610	94.199	254.120
PARKNG	6	4362.930	45.895	57.895	0.000	0.000	40.833	43.555	292.164
PARKNG	7	374.386	40.460	52.460	0.000	0.000	3.685	4.475	257.818
PARKNG	8	31.948	19.041	31.041	0.000	0.000	.629	.652	121.807
PARKNG	9	289.206	37.712	49.712	0.000	0.000	2.992	3.724	240.526
PARKNG	10	386.183	36.420	48.420	0.000	0.000	4.176	5.052	231.070
PARKNG	11	0.000	36.406	48.406	0.000	0.000	0.000	0.000	233.001
PARKNG	12	3880.026	57.410	69.410	0.000	0.000	16.578	47.542	241.943
PARKNG	13	665.604	40.641	52.641	0.000	0.000	7.089	7.195	260.017
PARKNG	14	4465.555	45.900	57.900	0.000	0.000	26.316	64.093	244.219
PARKNG	15	2822.261	36.191	48.191	0.000	0.000	33.802	32.973	231.621
PARKNG	16	668.127	35.192	47.192	0.000	0.000	8.288	7.872	225.229
PARKNG	17	1377.836	21.374	33.374	0.000	0.000	25.359	24.867	136.793
PARKNG	18	18747.497	61.630	73.630	0.000	0.000	59.418	233.204	268.429
PARKNG	19	1736.899	38.197	50.197	0.000	0.000	19.593	19.724	243.554
PARKNG	20	7021.257	79.924	91.924	0.000	0.000	40.435	41.343	511.068
PARKNG	21	17477.605	41.065	53.065	0.000	0.000	177.448	196.306	247.829
PARKNG	22	8440.227	39.177	51.177	0.000	0.000	108.611	73.560	250.733
PARKNG	23	1815.221	25.210	37.210	0.000	0.000	21.132	40.813	140.331
PARKNG	24	14855.803	143.439	155.439	0.000	0.000	47.198	52.422	904.179
PARKNG	25	3180.322	21.792	33.792	0.000	0.000	57.952	56.079	139.466
PARKNG	26	15084.003	52.374	64.374	0.000	0.000	178.411	68.715	335.196
PARKNG	27	15209.780	61.062	73.062	0.000	0.000	65.278	170.980	249.975
PARKNG	28	385.695	36.725	48.725	0.000	0.000	6.032	2.499	235.036
PARKNG	29	25348.611	55.765	67.765	0.000	0.000	238.859	164.304	356.895
PARKNG	30	1375.463	35.384	47.384	0.000	0.000	16.373	16.946	223.942
PARKNG	31	5957.590	47.008	59.008	0.000	0.000	30.318	88.678	247.755
PARKNG	32	333.979	78.591	90.591	0.000	0.000	2.964	.833	502.985
PARKNG	33	8621.870	135.568	147.568	0.000	0.000	14.808	48.954	534.345
PARKNG	34	3987.604	85.947	97.947	0.000	0.000	25.643	17.173	550.064
PARKNG	35	14507.351	72.183	84.183	0.000	0.000	93.196	92.291	461.971
PARKNG	36	1879.501	37.817	49.817	0.000	0.000	22.093	20.596	242.029
PARKNG	37	6162.608	80.878	92.878	0.000	0.000	41.612	28.409	517.622
PARKNG	38	1598.085	76.488	88.488	0.000	0.000	11.188	7.950	489.523
PARKNG	39	1026.298	75.524	87.524	0.000	0.000	5.948	6.696	480.532
PARKNG	40	1271.647	100.719	112.719	0.000	0.000	11.282	0.000	644.603
PARKNG	41	3048.024	102.592	114.592	0.000	0.000	15.970	11.872	656.588
PARKNG	42	791.287	22.173	34.173	0.000	0.000	13.995	14.119	141.767
PARKNG	43	40966.466	55.939	67.939	0.000	0.000	340.962	318.236	358.010
PARKNG	44	2228.601	300.680	312.680	0.000	0.000	3.611	3.657	1923.345

BATS MODEL OUTPUT 78/ 9/29 WILLIAMS AFB 11-1200 PREDICTIVE RUN - ONE PERIOD FROM 1100. TO 1200. HOURS

H.4. LINK TO LINK TRAVEL TIMES(SECONDS)

LINK	TRAVEL	TIMES		LINK	TRAVEL	TIMES		LINK	TRAVEL	TIMES		LINK	TRAVEL	TIMES		LINK	TRAVEL	TIMES		LINK	TRAVEL	TIMES	
1	16.	16.	16.	2	12.	12.	12.	3	13.	13.	13.	4	12.	12.	12.	5	14.	14.	14.	6	12.	12.	12.
7	22.	22.	22.	8	23.	23.	23.	9	11.	11.	11.	10	14.	14.	14.	11	24.	24.	24.	12	24.	24.	24.
13	10.	10.	10.	14	10.	10.	10.	15	10.	10.	10.	16	10.	10.	10.	17	10.	10.	10.	18	14.	14.	14.
19	24.	24.	24.	20	25.	25.	25.	21	12.	12.	12.	22	14.	14.	14.	23	10.	10.	10.	24	14.	14.	14.
25	24.	24.	24.	26	21.	21.	21.	27	12.	12.	12.	28	12.	12.	12.	29	23.	23.	23.	30	23.	23.	23.
31	22.	22.	22.	32	21.	21.	21.	33	21.	21.	21.	34	22.	22.	22.	35	22.	22.	22.	36	21.	21.	21.
37	12.	12.	12.	38	11.	11.	11.	39	20.	20.	20.	40	21.	21.	21.	41	22.	22.	22.	42	20.	20.	20.
43	21.	21.	21.	44	22.	22.	22.	45	18.	18.	18.	46	17.	17.	17.	47	19.	19.	19.	48	19.	19.	19.
49	38.	38.	38.	50	37.	37.	37.	51	5.	5.	5.	52	4.	4.	4.	53	10.	10.	10.	54	14.	14.	14.
55	7.	7.	7.	56	7.	7.	7.	57	11.	11.	11.	58	15.	15.	15.	59	25.	25.	25.	60	25.	25.	25.
61	20.	20.	20.	62	20.	20.	20.	63	22.	22.	22.	64	21.	21.	21.	65	21.	21.	21.	66	25.	25.	25.
67	19.	19.	19.	68	19.	19.	19.	69	35.	35.	35.	70	34.	34.	34.	71	10.	10.	10.	72	9.	9.	9.
73	11.	11.	11.	74	11.	11.	11.	75	30.	30.	30.	76	30.	30.	30.	77	21.	21.	21.	78	22.	22.	22.
79	7.	7.	7.	80	8.	8.	8.	81	11.	11.	11.	82	10.	10.	10.	83	7.	7.	7.	84	7.	7.	7.
85	25.	25.	25.	86	23.	23.	23.	87	8.	8.	8.	88	9.	9.	9.	89	8.	8.	8.	90	10.	10.	10.
91	8.	8.	8.	92	9.	9.	9.	93	28.	28.	28.	94	25.	26.	26.	95	46.	46.	46.	96	46.	46.	46.
97	44.	44.	44.	98	43.	43.	43.	99	43.	43.	43.	100	43.	43.	43.	101	9.	9.	9.	102	8.	8.	8.
103	9.	9.	9.	104	8.	8.	8.	105	10.	10.	10.	106	12.	12.	12.	107	21.	21.	21.	108	21.	21.	21.
109	5.	5.	5.	110	4.	4.	4.	111	11.	11.	11.	112	17.	17.	17.	113	26.	26.	26.	114	21.	21.	21.
115	12.	12.	12.	116	12.	12.	12.	117	105.	105.	105.	118	106.	106.	106.	119	22.	22.	22.	120	22.	22.	22.
121	11.	11.	11.	122	11.	11.	11.	123	21.	21.	21.	124	24.	24.	24.	125	11.	11.	11.	126	11.	11.	11.
127	15.	15.	15.	128	15.	15.	15.	129	11.	11.	11.	130	16.	16.	16.	131	10.	10.	10.	132	17.	17.	17.
133	9.	9.	9.	134	8.	8.	8.	135	10.	10.	10.	136	11.	11.	11.	137	11.	11.	11.	138	10.	10.	10.
139	48.	48.	48.	140	49.	49.	49.	141	27.	27.	27.	142	31.	31.	31.	143	18.	18.	18.	144	18.	18.	18.
145	7.	7.	7.	146	9.	9.	9.	147	11.	11.	11.	148	10.	10.	10.	149	16.	16.	16.	150	18.	18.	18.
151	21.	21.	21.	152	21.	21.	21.	153	29.	29.	29.	154	33.	33.	33.	155	8.	8.	8.	156	12.	12.	12.
157	57.	57.	57.	158	57.	57.	57.	159	15.	15.	15.	160	10.	10.	10.	161	41.	41.	41.	162	41.	41.	41.
163	212.	212.	212.	164	212.	212.	212.	165	172.	172.	172.	166	172.	172.	172.	167	20.	20.	20.	168	23.	23.	23.
169	151.	151.	151.	170	143.	143.	143.	171	49.	49.	49.	172	47.	47.	47.	173	16.	16.	16.	174	16.	16.	16.
175	10.	10.	10.	176	10.	10.	10.	177	10.	10.	10.	178	11.	11.	11.	179	15.	15.	15.	180	11.	11.	11.
181	10.	10.	10.	182	12.	12.	12.	183	61.	61.	61.	184	63.	63.	63.	185	10.	10.	10.	186	9.	9.	9.
187	7.	7.	7.	188	7.	7.	7.	189	17.	17.	17.	190	18.	18.	18.	191	11.	11.	11.	192	12.	12.	12.
193	22.	22.	22.	194	18.	18.	18.	195	14.	14.	14.	196	10.	10.	10.	197	10.	10.	10.	198	10.	10.	10.
199	17.	17.	17.	200	17.	17.	17.	201	8.	8.	8.	202	11.	11.	11.	203	7.	7.	7.	204	7.	7.	7.
205	11.	11.	11.	206	11.	11.	11.	207	15.	15.	15.	208	10.	10.	10.	209	8.	8.	8.	210	8.	8.	8.
211	8.	8.	8.	212	8.	8.	8.	213	13.	13.	13.	214	9.	9.	9.	215	15.	15.	15.	216	10.	10.	10.
217	12.	12.	12.	218	11.	11.	11.	219	9.	9.	9.	220	12.	12.	12.	221	9.	9.	9.	222	11.	11.	11.
223	2.	2.	2.	224	3.	3.	3.	225	8.	8.	8.	226	13.	13.	13.	227	9.	9.	9.	228	10.	10.	10.
229	12.	12.	12.	230	10.	10.	10.	231	9.	9.	9.	232	9.	9.	9.	233	19.	19.	19.	234	19.	19.	19.
235	17.	17.	17.	236	17.	17.	17.	237	102.	102.	102.	238	107.	107.	107.	239	80.	80.	80.	240	80.	80.	80.

I.1. NETWORK SUMMARY PARAMETERS FOR TIME PERIOD

TOTAL TRAVEL TIME ON NETWORK 75.(VEH-HRS)
TOTAL RUNNING TIME IN PARKING ZONES 73.(VEH-HRS)
TOTAL VEHICLE MILES TRAVELED ON NETWORK 1676.(VEH-MI)

TOTAL INTERSECTION DELAY ON NETWORK 6.(VEH-HRS)
TOTAL STOPS AT INTERSECTIONS 5470.(VEH)
TOTAL OF INTERSECTION AVERAGE QUEUE LENGTHS 255.(M)

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        AEOYBGN.   79/05/16. SRI KRONOS/NOS (0) WEDNESDAY

16.04.51.DJD5,CM200000,P20,T400.
16.04.51. PRIORITY 20B.
16.04.51. ---FOR COS INFO CALL EXT 5050.
16.04.51.ACCOUNT(WADJD,)
16.04.51.ATTACH(LGOPLOT)
16.04.52.GET(WILLIAM)
16.04.52.MAP.
16.04.52.GETLIB,SUBLIB.
16.04.53.NOEXIT.
16.04.54.GETLIB,CCTAPE.
16.04.54.LDSET,LIB=CCTAPE/SUBLIB.
16.04.55.LGOPLOT,WILLIAM.
16.05.10.      NON-FATAL LOADER ERRORS - SEE MAP
16.08.35.STOP
16.08.35.REPLACE(TAPE7=TAPE7)
16.08.36.RETURN(TAPE1)
16.08.36.UQIN,       0.002KPRS.
16.08.36.UQPR,       0.323KPRS.
16.08.36.UEPF,       0.100KUNS.
16.08.36.UEMS,       5.032KUNS.
16.08.36.UECP,      52.091SECS.
16.08.36.AESR,      10.933UNTS.
16.08.36.UECM,      62.014KWRD.
16.08.36.AES$,      10.740$$$$.
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